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AMERICAN FORESTS

EDITOR
Ovid Butler

ASSOCIATE EDITORS
Lilian Cromelin
Erle Kauffman

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THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor, the teaching of conservation in the schools of the country, promotion of research in timber growing and use and expansion of markets for forest products.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidates in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, see page 412 of the September issue or send for special announcement of this Big Tree hunt. Mail your nominations with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

Is This the Largest Alligator Juniper?

A MOST unusual challenger is this tree, nominated by Mr. C. W. Zumwalt, an assistant range examiner in the Soil Conservation Service at Salt Lake City, Utah. It is an Alligator Juniper (*Juniperous pachyphloea*) and is located in the north end of the Fort Bayard Military Reservation, eight miles from Silver City, New Mexico, in the Gila National Forest.

A magnificent specimen, and nominated as the largest of its species in the Southwest, it is sixty-six and a half inches in diameter, breast high, seventeen feet five inches in circumference and seventy-two feet in height.

Its beauty and grace are obvious, and while there is no exact knowledge of its age, it is estimated to be not less than one thousand years old. Many people have photographed this grand old tree, but the best known photograph is the one shown here, made by Ray Holzman, who is a photographer in the Soil Conservation Service.

New Mexico's giant Alligator Juniper

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FRANK E. MULLEN

MR. MULLEN was elected to the Board in January, 1941. A pioneer in radio and broadcasting, his career dates back to the "grass roots" of the industry in 1923. Since then, closely associated with every phase of the progress of broadcasting and radio as a national public service, he has envisioned and actively pioneered in many phases of its amazing development.

Born in Clifton, Kansas, he was reared on a farm in South Dakota, where his father was a lawyer and county judge, and where—he says—"you could look for forty miles without seeing a tree in any direction." So he went to Iowa State College, at Ames, to study forestry because he wanted to learn how to do something about it. But the World War intervened and in 1917 he went overseas. Returning to Ames after the war, he specialized in agricultural journalism and was graduated in 1922. In 1923, conducting a farm news page in Iowa, he had his first call to Pennsylvania as a radio editor. From then on he inaugurated and expanded programs directed to farmers until, in 1927, he originated and produced the National Farm and Home Hour over the NBC blue network—a farm program that has never been off the air since then and today is heard by a daily audience estimated at 17,500,000 listeners. A progressive thinker and full of energy, Mr. Mullen soon became an important factor in the public relations and advertising fields of the industry and, in 1939, was elected a vice-president of RCA. In the summer of 1940 he became vice-president and general manager of the National Broadcasting Company, which office he still holds.

Genial Frank Mullen believes in the future of radio and in its great potentiality to help solve the tremendous economic and social problems ahead of us. "Electric communication is going places in the next decade. The broadcasting art is on the threshold of new frequency domains, new modulation and transmission systems, facsimile, television and other fundamental additions . . . our boundaries are no longer those of the earth. We can dream about frontiers stretching to the moon and not exaggerate." And the truth of his vision is already demonstrated.

A typical American, he said in a recent address: "The United States today is facing decisions which will affect our national and personal destiny for generations to come. We have gone through an acceleration of growth in our young life as a nation that has put us at the top of the family of nations. . . . Implicit in our national heritage is individualism and independence. . . . The American idea recognizes no limits or boundaries to man's progress . . . the march is ever forward, not back. In between selfish individualism and collectivism is the American ideal—cooperation." This, with reference to the production of new business, new products, new services,—no matter how dark the outlook. For he believes that by advancing on "new frontiers" of business, we shall prepare for a continuation of the American way of life and insure the preservation of our democratic principles.

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FREQUENT stories of magical achievements with wood, credited to the Nazis under pressure of a military economy, reach this country. A recent press dispatch from Berlin adds a new one that is calculated to stimulate the public imagination and at the same time to test the credulity of veteran protectors of our own forests. Long ago, Germany fire-proofed its forests against peace-time fires—a thing we have not yet succeeded in doing. But now comes a new danger—raiding enemies dropping incendiary bombs from the sky into Germany's well tended and zealously guarded forests.

To guard against destruction from this source and the disruption of local economy which goes with great forest fires, the Germans, according to the report, have developed a method of fire-proofing whole forests. The method is said to involve a double step procedure. First, planes circle over a forest dropping chemical bombs which create a gas among the trees. When this gas has had time to impregnate the bark and leaves, planes again circle over the forests and drop great quantities of a white powder substance, the basis of which is ordinary table salt. Reaction of the powder on the gas film on the trees is said to form a fire-resistant substance which protects the forest against flames.

Forest technicians in this country undoubtedly will scoff at the scientific plausibility of this story. In these days of chemical wonders, however, it would be wiser to do some intensive research along this line on our own account before saying the fire-proofing of forests chemically is not possible. Many things are done today in forest protection and utilization that twenty years ago were thought to be beyond the realm of feasibility.

* * * * *

There is a sad and unwritten ending to Ben East's delightful article about Bill King, the old hermit on the remote shores of Burt Lake, Michigan, who for twenty-five years has maintained a winter rendezvous with ruffed grouse at his cabin door. A few weeks after Mr. East wrote his story and sent it to the editor, a letter came from him saying that Bill King had fed his last grouse.

"Bill died this winter at his lonely little cabin," wrote the author, "after I had finished and sent you the story. The grouse still gather in the clearing at dusk and dawn waiting for the handout of corn that is no longer there."

* * * * *

Secretary of War Stimson is not associated generally in the public mind with the forestry movement in America. Nevertheless, he holds a distinction in that field not shared by any other man. In 1911 Congress passed a bill which has since been known as the Weeks Act. It provided initial authority for the federal government to buy land for the creation of national forests in the eastern United States. To pass upon and determine the lands to be bought from year to year, the act provided for a commission to be known as the National Forest Reservation Commission, consisting of the Secretaries of War, Agriculture and Interior, and two members each from the Senate and House.

The Weeks Act was passed March 1, 1911. A week later—on March 7—the first meeting of the newly created National Forest Reservation Commission was held, and the then Secretary of War was chosen president of the commission. At the time, Henry L. Stimson was Secretary of War under President Taft, and he therefore became the commission's first president. It has since been traditional custom for each incoming Secretary of War automatically to become president of the commission. Now, after an interval of thirty years, Mr. Stimson is again president of the commission. Since that first meeting on March 7, 1911, presided over by him, thirty-nine national forests have been established in the east and 18,000,000 acres of forest land have been approved for purchase.

Ovid Butler

Editor.

Biltmore - - - Fountain-Head of Forestry in America

•

Here, on the Vanderbilt Estate in North Carolina, was Staged the First Large Scale Practical Experiment in Private Forest Management in the United States

By E. H. FROTHINGHAM

Elliott Lyman Fisher

In this lovely streamside glen at Biltmore, northern hemlock meets bald cypress from the southern swamps

WHEN in 1892 George W. Vanderbilt retained Gifford Pinchot as forester for the Biltmore estate in North Carolina he set the stage for the first venture in technical forestry ever to be attempted on a substantial scale in the United States. Years earlier, of course, plans had been made and trees planted in a few regions for specific purposes such as the production of live oak ship timbers and the establishment of farm windbreaks; but not until 1892 had any serious endeavor in the science and art of forestry, already an old profession in Europe, been launched in this country.

Even the idea of forestry was relatively new. "In 1876," wrote Dr. B. E. Fernow in a report to the Secretary of Agriculture, "when the first agency to report on forestry was established in the Department, the very word 'forestry' was absent from the dictionaries. The idea of an art by that name and of its objects and methods did not exist among our people, except with a few who had travelled abroad."

When forestry began at Biltmore the Forest Reserve Act was not a year old; the first few reserves of western public timberland had just been proclaimed by President Benjamin Harrison. Fourteen years were yet to pass before the reserves were transformed into national forests, and nineteen years before authority to purchase national forest lands in the East was granted under the Weeks Law. Biltmore forestry was a going concern at a time when there was not a single American forest school and when there was only one American born, technically educated forester—Gifford Pinchot.

The story of the early beginnings at Biltmore was told in an article by Josephine Laxton which appeared in the May, 1931, issue of AMERICAN FORESTS. The first of the 300 or more tracts that made up the estate at its largest were purchased in 1889. They were chiefly farm lands, part woods and part cleared and cultivated fields, many of which were eroding and unsightly. By 1893 more than 7,000 acres had been acquired, and at the time of Mr. Vanderbilt's death, in 1914, the area of the estate had grown to more than 100,000 acres. It extended about twenty miles southwesterly from Biltmore, along the ridges north of the French Broad River, to a point beyond Brevard, North Carolina, taking in as much forest and as little cultivated land as possible.

This large tract—large in terms of American privately owned estates—was developed as it was acquired for the multi-use purposes of the estate. A part became the quaint English-style, stucco-and-timbered village of Biltmore, where weaving and wood-novelty industries, operated by local inhabitants, were developed commercially. Systems of roads and trails were built to far points on the estate, giving access by horse and foot to Mount Pisgah, the Pink Beds, Lookingglass Rock, and other scenic spots. Five years were occupied in the building of the stately mansion, now familiar to literally hundreds of thousands of visitors since its opening to the public in 1930. Large areas in the neighborhood of the mansion were opened up by winding macadamized roads and landscaped by the planting of decorative trees and shrubs in great variety. Ponds and lagoons constructed in the course of this landscaping program were planted with game fish and became the resting place for quantities of migratory wildfowl.

To supplement the native game population, deer were introduced and the breeding of several varieties of pheasants was started. Suitable crop lands were devoted to intensive agriculture, and the beginnings of what has become one of the South's most modern and important dairy industries were initiated. And while all this was going on a program of forest management, in harmony with the other purposes of the estate, was being conducted as a means of ensuring a later permanent source of income.

Along the approach road to the mansion, rugged yellow pines and trim white pines vie in characterful beauty

The genesis and career of this forestry program form one of the most intriguing chapters in the history of American forestry. It was taken up by Mr. Vanderbilt upon the insistence of Frederick Law Olmsted, who was in charge of the landscaping of the estate, a post since held by his assistant and successor, C. D. Beadle. The appointment of Gifford Pinchot as first forester was upon the recommendation of Charles Sprague Sargent. Mr. Pinchot, newly returned from training at the Forest Academy at Nancy, France, employed as a field assistant Henry Solon Graves, who later succeeded Mr. Pinchot as chief forester of the United States.

The early work of 1892 and 1893 is described by Mr. Pinchot in a booklet, *Biltmore Forest,* prepared for the Chicago World's Fair of 1893. This booklet outlines a working plan for the 7,282 acres then in the estate, dividing the forested area into ninety-two compartments, part of which were to be managed under high forest (clear-cutting blocks in series, for sustained yield) and part under the selection system, localized to obtain the yield from one-fifth of the area during each period of five years. A rotation age of 150 years was adopted, and improvement cuttings were made. A nursery was installed on the Swannanoa River bottoms at Biltmore in 1892 or 1893. The first substantial forest planting, which resulted successfully in what are now the largest white pines on the estate, had been done two years earlier, in 1890, under the direction of Mr. Olmsted. As an adjunct to the forestry program, however, planting really dates from the first products of the Biltmore nursery. The nursery was destroyed by the disastrous flood of the Swannanoa Valley in 1916; and the same flood also did irreparable damage to herbarium collections and a bo-

tanical library of great value which had been assembled in the estate offices by Mr. Beadle. What could be salvaged of these invaluable collections was presented to the Smithsonian Institution.

Although the financial proceeds of the first year's forest management were not great, Mr. Pinchot's records show that there was at least a clear profit of several hundred dollars—a gratifying beginning.

In 1895 Mr. Pinchot was succeeded as forester by Dr. C. A. Schenck, who had been recommended for the place by the distinguished British-Indian forester, Sir Dietrich Brandis. Dr. Schenck continued the forest management of the estate as it expanded in size, his operations extending to the vicinity of Brevard. Dr. Schenck's cuttings were of considerable variety, but in the main they were improvement cuttings, limited by exacting commercial requirements and by inadequate funds for non-commercial cultural treatment.

By 1896 Dr. Schenck had five or six assistants, among them Overton W. Price, who later became associate forester of the Bureau of Forestry, under the leadership of Gifford Pinchot. These assistants served without pay, for the training, and, in 1898, this led to the establishment of the Biltmore Forest School. Vying with Cornell for the honor of pioneer school of forestry in the United States, Biltmore was for years the only school devoted exclusively to the teaching of technical forestry. Twelve months of intensive study followed by six months of practical experience led to the degrees of Bachelor of Forestry and Forest Engineer. When Dr. Schenck left the estate, in 1909, he took his school with him on an itinerary which led the students each year to Germany during the winter, the Adirondacks in early spring, the South during the late spring, and the Lake States for the remainder of the year. The school was finally disbanded, in 1914, when Dr. Schenck left America to take up arms for Germany in the World War.

Since Dr. Schenck's departure the estate has been without a forester. Fuelwood and other needed products have been cut, but while the cuttings have been made with some care for the maintenance of a constant supply they have not followed the management plans previously in force. As early as 1912 financial stringencies connected with the administration of the estate impelled Mr. Vanderbilt to contract the sale of stumpage on some 80,000 acres to the Carr Lumber Company, of Pisgah Forest, North Carolina, under diameter limit restrictions. Two years later transfers to the federal government were initiated, which, when completed in 1922, totaled 80,381 acres. This became the nucleus of the Pisgah Division of the Pisgah National Forest. In 1921 another sale, of 1,500 acres, was made to the Biltmore Estate Company, a local syndicate, which has developed the tract as the incorporated town of Biltmore Forest. By this transfer the estate was reduced to its present area of 12,000 acres. Within the town limits of Biltmore Forest can still be seen considerable areas of the forest plantations, but the greater part of them remain within the present estate.

These plantations, established as integral parts of a much more inclusive forest program, have become practically the only remaining evidences of that program. Of the extensive silvicultural operations in the native woods, precise records are no longer available, and the cuttings can be traced only in part and with difficulty. Those on the area sold to the government have been obliterated by the subsequent lumbering. For some of the plantations, on the other hand, fairly complete records have been assembled by the Appalachian Forest Experiment Station and appear in the publication *Forest Plantations at Biltmore, North Carolina,* by Ferdinand W. Haasis. The total area planted is not known. Because of the newness of the work in this region failures were inevitable; and few traces of these remain. Including the failures and numerous replantings it is estimated that the total area covered by planting operations may have been as high as 3,000 acres, but it is probable that well-marked stands of planted timber never covered more than 1,000 acres. Some good stands have been cut to make way for agriculture, and many were on the land that was sold.

The planting was a pioneering job, with no past experience to guide it. It was a virgin field for experiment, into which the early workers plunged with enthusiasm. At least forty different tree species, native and foreign, were tried, in pure stands and mixtures, by diverse planting methods. Among the species tested were ponderosa pine, Douglas fir, blue spruce, Sitka spruce, concolor fir, Oregon ash, and big-leaf maple from the western United States; red pine, jack pine, and balsam fir from the Lake States; Norway spruce, Scotch pine, and silver fir from Europe; Siberian and Japanese larch; and the native white, shortleaf, pitch, and Virginia pines, Carolina and eastern hemlocks, red spruce, southern balsam fir, and many of the native hardwoods, such as yellow poplar, ash, oak, walnut, butternut, cucumber magnolia, sugar maple, hickory, chestnut, black cherry, and locust. What soils to plant them on, whether they would thrive or die in the Biltmore climate, was anybody's guess. Some of them, like ponderosa pine, Oregon ash, and big-leaf maple, passed out completely and in a short time. Remnants of the larch and Douglas fir have hung on precariously to this day. Others have thrived like the proverbial green bay tree, and most of these, it is worthy of note, are natives.

Except for the previously mentioned white pine planting by Mr. Olmsted in 1890, small areas planted by Mr. Pinchot, and some final plantings of Norway spruce by Mr. Beadle between 1909 and 1912, all the plantations were established under the direction of Dr. Schenck. At the beginning of his work the success of the first pine plantings appeared dubious, and he decided to use hardwoods, chiefly the native species. He was soon convinced by failure after failure that hardwood planting did not meet the needs of the estate program, which called, in part, for the early covering of unsightly eroding slopes. He accordingly returned to the use of pine and, to ensure the quick covering of the land, planted them very densely. For the greater part of his planting he employed white, shortleaf, and pitch pines.

In planting as densely as he did—some of the plantings were at the rate of 5,000 an acre—Dr. Schenck had in mind early and repeated thinnings to develop well-formed, well-spaced trees and provide an income from the wood removed. This intention was frustrated by the discontinuance of the forestry program in 1909. Without subsequent care some of the planted stands soon reached the point of stagnation and many have suffered in one way or another from neglect. Had the program gone on as planned, early weedings would have removed trees that turned out later to be "wolves," thinnings would have increased the spacing, and by now the plantations would have contained fewer, better, more rapidly growing trees.

But in spite of all handicaps, the majority of the plantations have done well and bid fair to become truly imposing stands. In the life-span of a tree they are still young; the oldest plantation is fifty-one years old. Named the "Douglas" plantation (after the nursery company employed for the planting) it comprises nu-

merous groups of pure white pine at different points in the estate and in Biltmore Forest, some 300 acres in all. Along the major roads and near the mansion, where their full, even, blue-green crowns fit gracefully into a varied and restful landscape, the trees have been pruned to heights of twenty feet or more, presenting long, clear boles, some of them sixteen or eighteen inches in diameter at breast height.

In the original planting plans the keynote was utility combined with beauty. However much the discontinuance of the forestry program upset the hopes of foresters for tree crop production, the esthetic purpose of the plantations, where they are visible from the lines of travel through the estate, has been splendidly accomplished. "Long Ridge," the largest and most conspicuous of the planted areas, has been transformed from a series of eroding red clay slopes to a shady and inviting forest of white pines, mixed, in places, with the livelier green of sugar maple, white and chestnut oak, and black cherry. Long, sombre strips of Norway spruce line the bottoms of wooded slopes. Groups of stately Carolina hemlocks—a species almost confined to the State of North Carolina—alternate harmoniously with the finer-leaved and lighter-green eastern hemlock. Rugged yellow pines and trim white pines set off each other, and here and there some foreign species—Douglas fir, larch, or bald cypress—lends interest. Rare shrubs and small trees in seemingly endless variety blend with the forest growth to make of the estate a botanist's paradise.

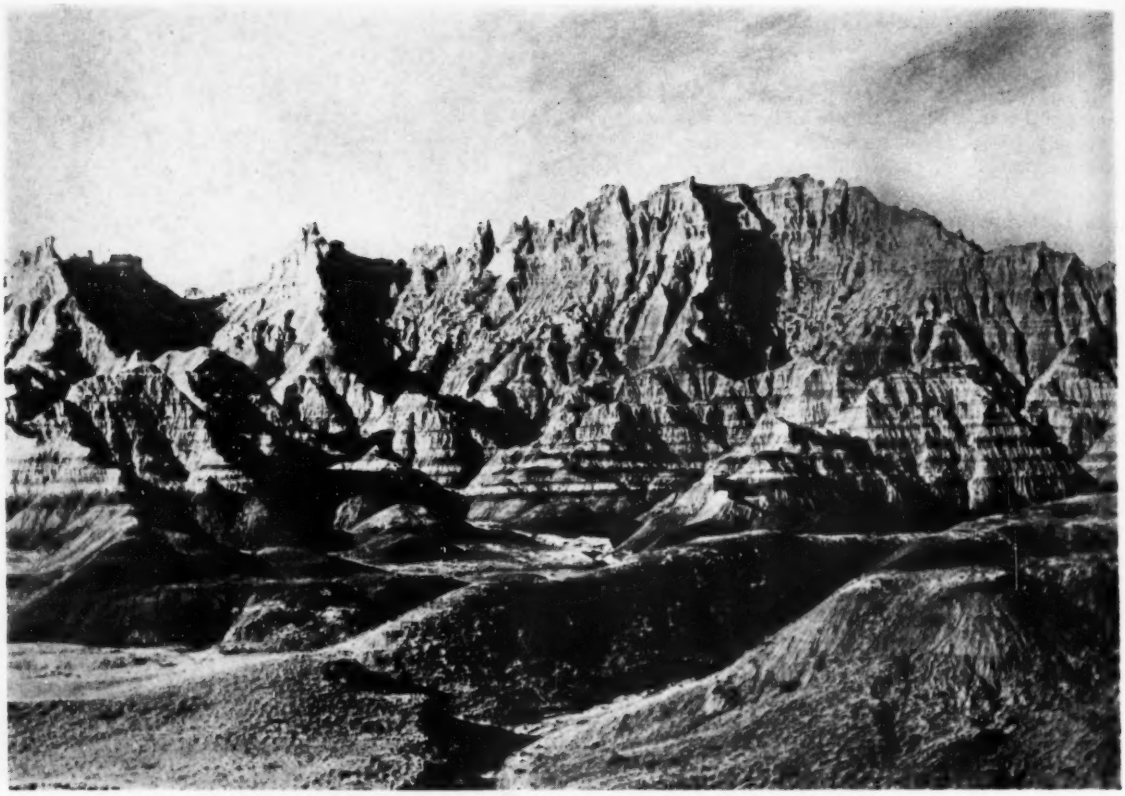
Esthetic attractiveness, however, is far from the only contribution the plantations have made. Through thinning experiments conducted, on a small scale, by the Appalachian Forest Experiment Station in cooperation with the estate, the plantations continue to add to forestry knowledge. These experiments, started in 1916 by the United States Forest Service when the planted stands concerned were from seventeen to twenty years old, have already given results of considerable interest. After four recurrent thinnings one thinned white pine stand, for example, has produced at the yearly rate of one and a half standard cords an acre of wood suitable for pulp, as against one and a tenth cords for the unthinned check plot and the thinned stand now has a much greater volume of large, high-quality trees suitable for lumber.

Although commercially the plantations have not fulfilled the expectations of their founders, they have set up for foresters a notable object lesson of success and failure in forest planting. They are among the oldest of existing forest plantations, at least in the Southeast. In them can be learned the results of attempts to grow two or more species in mixture; of underplanting hardwoods with conifers; of growing the same species on different soils; of planting seedlings of different ages in alternate rows; and of the fitness of different species for planting within the climatic and soil types represented. In many similar ways the work started by the pioneers at Biltmore half a century ago is continuing to bear fruit.

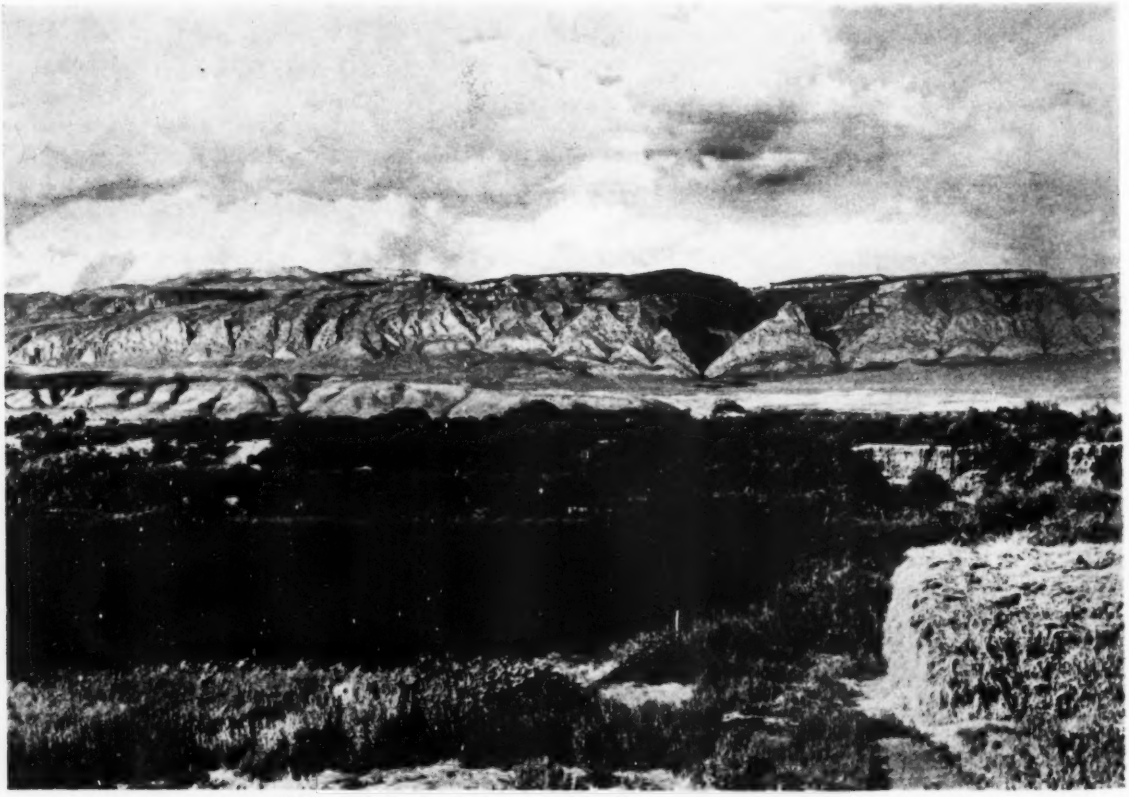
Top—A sugar maple plantation on the estate, which is twenty-four years old

Middle—A white pine stand which has been thinned four times, demonstrates its superiority to its unthinned check stand

Right—In the interior of the "Douglas" plantation,—eastern white pine and the oldest forest planting on the estate, as it was set out by Robert Douglas and Son in 1890



Beauty paints with a strange brush in the South Dakota Badlands, using shadows to reveal gables, pinnacles and sharp ravines rising from level beds of clay

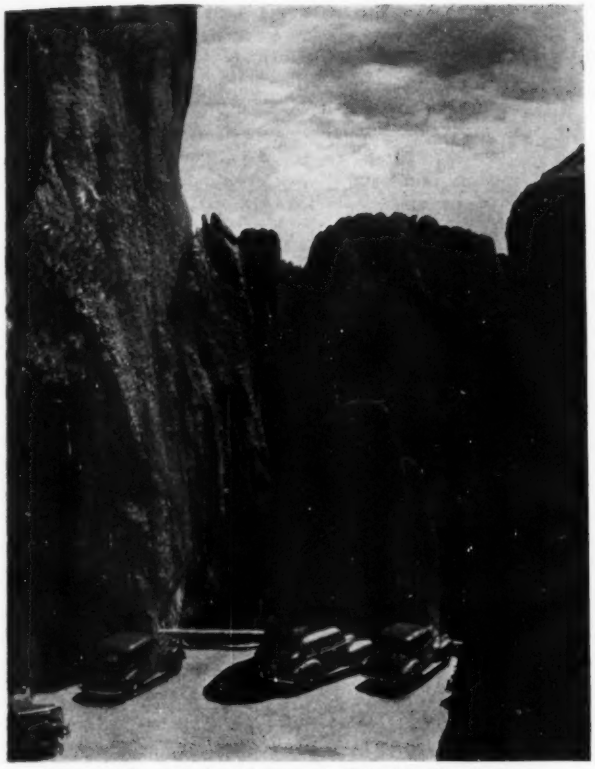


Alfalfa and steeply tilted rocks reflect the sunset's red and gold in this unmatched vacationland along the western slopes of the Bighorns

FROM THE PRAIRIES TO THE BIGHORNS

Vacationing With a Naturalist in the Black Hills and Points West

By CARROLL LANE FENTON



Cars must be parked at the summit of the Needles Highway, as their owners take to the trails among the granite towers

"NATURALISTS, eh?" asked a fellow camper as we checked specimens and notebooks. "Well, I'm afraid you'll not see much on the God-forsaken flats you're going to cross tomorrow!"

Those "flats" began with the prairies of South Dakota, along U. S. Highway 16. We saw hills, rich fields and pleasant groves which bore few traces of the droughts that had scourged them during the 1930's. Cornfields suggested Iowa, but black lark buntings with white bands on their wings told that we were nearing the West. So did the white-tailed jack rabbits whose dead bodies dotted the black-top road.

No line told us where we came to the plains, yet the change was surprisingly abrupt. Hills became rolling swells; natural groves disappeared; shelterbelt plantings increased. We stopped to look at one line of vigorous young trees, and the farmer came up to chat. "Some growth, isn't it?" he remarked. "It would be a lot better if I hadn't held off at first—thought trees wouldn't live here. But a government man persuaded me to try, and I'm mighty glad he did."

Cars whizzed past as we talked, most of them vacation bound from the East or the Middle West. Some carried almost no luggage; their owners plainly stopped at hotels or completely furnished cabins. Other cars pulled trailers—compact houses on wheels whose occupants could put up for the night at a camp, a roadside filling station, or an unfenced corner of the plains. Our own outfit was not so pretentious, for we are among the conservatives who still camp in tents. We like the freedom they give us, their difference from houses or apartments in which we live during the rest of the year. There also is a big difference in cost between an $80 tent and a $600 trailer.

Most trailer tourists kept to the main highway, though they might have followed as we took State Highway 40 a few miles west of Kadoka. It climbed rolling hills and dipped to cross dry creeks whose courses were marked by cottonwood trees. It passed a sunbaked photographer's stand where a young man in shorts waved an imitation Stetson from the back of a stuffed bucking bronco. Then the road turned southward and sped down a grade to the heart of the Badlands.

We reached the Badlands in late afternoon, while they baked in the heat of inferno. Many travelers glanced, gasped and went on, wondering what had become of the beauties they had been told to see. We were satisfied to find a level camping spot and doze for an hour in the strip of shade provided by our car. Then the heat became less intense; blue shadows revealed pinnacles and ridges which rains had carved from beds of clay mixed with volcanic ash. Canyons seemed to develop as we watched; gullies wound across cream colored flats; walls that had been smooth became mazes of columns and gables divided by crevices. As these irregularities appeared, the lowering sun added richness to the buff, rose and old gold of their stratified clays. We breathed a prayer that our exposure meter would register the failing light accurately. What a shame if color film should be underexposed, giving blues instead of the warm tones that bathed every pinnacle and butte!

Next morning we were out to catch the clouds, which vanished before seven o'clock. We were joined by tourists from a cabin camp below the pass, and others who had risen before sunrise and had driven from Kadoka. "We do this every summer," one woman explained. "Now for Rapid City and a bite of breakfast before we go into the Hills."

Though the Black Hills stand squarely across a main tourist route, they have two disadvantages. First, their name is deceptive; few people expect to find among them the most spectacular granite mountains east of the Sierra Nevada. Second, too many travelers visit them incidentally, making a hasty detour in their trips to the Yellowstone.

Camped beside Horsethief Lake, we met one family who had not made this error. "I've got a job in Chicago," the father explained, "and by juggling things a bit I manage to get seventeen days' vacation. That's not bad, but it won't take us far in the Rockies—not unless we drive too fast and get the kids all upset by a lot of

hurrying. So Mother and I figured things out. We allowed five days to come out and get home again, leaving twelve days for camping, hiking, fishing, and longer trips by car. We do something new every day—but unless something happens to the car, our whole vacation will cost less than $75."

But, you may ask, are the Black Hills worth twelve days of a family's vacation?

The answer is yes. More than a billion years ago, the Hills were masses of molten lava that pushed upward through the earth. They bent and crumpled beds of shale above them, turning it into a black, glistening rock whose only name is schist. The lava also sent out veins of gold ore and others containing crystals. At last the molten rock cooled, hardened and turned into gray granite.

Motorists see this hardened lava; hikers cross bands of schist and pry crystals from the coarse veins. They also see how seas spread across both schist and granite, depositing gravel, sand and lime mud that slowly hardened into stone. When the region was pushed upward into mountains, these strata formed tilted ridges called hogbacks around the granite peaks. Other strata actually cover the granite throughout a large part of the Hills.

The last uplift came during the Ice Age, perhaps a million years ago. Since that time frost has checked and split the granite peaks, dividing them into towers and columns like those along the Needles Highway. At the same time, streams dug deep valleys like the one above which Mount Rushmore towers. In the limestone, another stream cut Spearfish Canyon, which reminds one of the Wind River Canyon in the Rockies of Wyoming.

The hiker, however, sees more than rocks and valleys and pinnacles. Trails run through forests of spruce whose needles absorb so much light that they make the Hills look black from a distance, thus explaining their name. Ridges and granite mountains have forests of pine, a subspecies of the well-known ponderosa which provides much of our best lumber. Junipers grow on sandstone hogbacks, where their roots wind through crevices in search of soil and moisture.

The city dweller needs time to become acquainted with these trees. He needs long evenings in which to watch beaver, more plentiful in some valleys here than in Rocky Mountain National Park. There also are yellow-haired porcupines, which sometimes tuck their noses between their paws and hold the trail against all comers. Whiskey-jacks pick up crumbs from one's lunch—sometimes they take sandwiches, too. If one is lucky, a bushy-tailed packrat may peep out from rocks or visit camp on moonlit evenings. The packrat has a bad reputation, but its beauty and grace excuse it for taking a cake of soap or a spoon.

Worth traveling miles to see is mystifying Devil's Tower—huge columns of hardened lava rising more than 800 feet above a platform of golden brown and deep red stone

Longer trips reach mines, waterfalls, hot springs and caverns, including Wind Cave National Park. We also detoured to the plains, where Bear Butte rises like a volcano. It actually is a hardened "blister" of lava which pushed the strata above it upward into an amazingly steep dome. Now that most of those strata have been worn away, the "blister" is breaking into blocks which roll and slide down its slopes.

From the Black Hills we drove to Devil's Tower, where huge columns of hardened lava rise more than 800 feet above a platform of golden brown and deep red stone. Some geologists think the Tower columns are the core of a lava blister like Bear Butte; others say that they filled a hole, or neck, through which lava poured out on an ancient surface that since has been worn away. Be that as it may, Devil's Tower at sunset is worth traveling miles to see, and its eastern side at nine in the morning is a color photographer's dream. We spent so much time taking pictures that we had to stay a second day in the campground among tall, red-barked pines.

From Devil's Tower to Ucross is a road that can be pure misery in August, when winds are high and hot. In June it is made beautiful by the blossoms of prickly pears. Acres of them cover the gray shaly soil, with its buttes which burning coal seams have baked to brown, crimson and brick red.

At Ucross, signs used to scream "Come to Sheridan, Dude Ranch Capital of the World"; "Go to Yellowstone Park via Billings"; "See the Bighorns and Buffalo"; "Sheridan - Dayton - Cody", connecting those places with a straight line that ended in Yellowstone National Park. Beyond that there seemed to be nothing—not even the Pacific Ocean.

Buffalo signs were fewest, smallest and most weather-beaten, which prejudiced us in their favor. An irrational reason never gave better results, and we somehow cannot bring ourselves to try another route. We decided to do so as we left Devil's Tower, but at Ucross we swung southward on U. S. 16. In two hours we were high in the Big Horns, looking for a place to camp.

Do you want something different among highlands? Then fill your gasoline tank at Buffalo and follow us along the highway that climbs beside Clear Creek. Up you go for 4,000 feet; then you find yourself on top of the world, on a forested plain above which rise distant, snowy peaks. Forget-me-nots and shooting stars bloom beside the road; blue lupine stands among fallen logs; herds of cattle graze upon meadows much as they do at home. You have climbed a mountain range, only to find yourself on rolling ground at the foot of mile-high crags.

The explanation? This rolling surface really is a plain, worn by sluggish rivers more than 600,000,000 years ago. Seas then spread (*Continuing on page* 254)

THE FLY ROD FOR BLACK BASS

By L. N. KILMAN

TO TAKE his black bass, the fly rod user lays out his bass bug or floating frog or mouse carefully. There the bug, a delicious seeming tidbit in the eyes of the bass, sits quietly, some forty feet away, at the end of a six-foot leader. Usually the lure is skillfully placed near an old stump or a lily-pad, or, better still, beneath the overhang of a tree where bass are apt to lurk, waiting for falling insects.

It is about five o'clock in the afternoon. The sun is well along in the west and a rich shadow is cast by trees that stand in serried ranks at the water's edge. The air is still, the surface of the water like a mirror. Afar a loon calls to his mate. Wars and rumors of wars are far away. One philosophizes that there are, after all, three main reasons why men go fishing: First, to experience the unexpected shock of surprise when a bass strikes; second, to suffer the blessed anguish of fear that he may escape; and third, to enjoy the hope that he may be a whopper.

The bug is caused to tremble slightly, giving the impression of an insect struggling to get off the water; then it is moved a bit by stripping line with the left hand or elevating the tip of the delicate rod with the right hand. If no strike occurs, the lure is lifted deftly and placed a foot farther along. Thus one combs the area. Perhaps a bass rolls at the artificial and misses. They frequently do. The lure is picked up speedily and a fraction of a second later is right back at the same spot. Or perhaps at the moment one discerns the tell-tale rings in the water that show where a bass is feeding at the surface. Instantly, and with the accuracy and speed of the bow-and-arrow, the lure can be dropped into the center of that ring. A breathless moment ensues. Then, ah, then—there is an explosion. It comes with terrific suddenness, for the bass, entirely familiar with the manner in which an insect can escape, knows this is no time to nibble. He hits—and the fight is on. He plows deep; then he is up in the air, all of three feet. The five-ounce split bamboo rod, taking a large part of the play, ares until you tremble. Minutes later, you slip the net under that warrior of the deep.

On a recent trip I took two smallmouth bass, each weighing over four pounds, within five minutes. They were the finest fish caught in ten days of straight angling during which my live-bait companions were using minnows, frogs, helgramites and even the lowly worm.

The reward of being an "angler with a rod"

My pair of bass was the sweetest of answers to that famous prayer of the angler:

> Lord, give me grace to catch a fish
> So big that even I,
> When talking of the fish I caught,
> May never need to lie.

Experience with the fly rod during the past four years has convinced me that, day in and day out, it will capture more bass than is generally possible for the live-bait fisherman or the plug caster. Of course, the type of water being worked may make a difference. I am here dealing with typical territory, such as small

lakes and rivers. Furthermore, the fly rod does its duty painlessly, as the fish strikes the lure with such volcanic intensity that he nearly always hooks himself in the lip and is never injured—which allows the liberal releasing of fish.

Observation of hundreds of anglers in camps where I have been, induces the conclusion that, as a class, fishermen are a peculiarly unprogressive lot. In the southern states, the slender rod is used by a much higher precentage of anglers than in the northern states, where the fly rod devotee is one in a thousand. Too many anglers raise their eyebrows when asked why they do not cultivate the fly rod. They feel that there is something recondite in the handling of the fairy wand and that the expense of acquiring one is too great. Expert anglers, including men like my good friend Otto H. Peters, of Buffalo, New York, who has been national tournament champion of both fly and bait rods, assert that a fair degree of skill with the fly rod is less difficult to acquire than victory over the bait rod which is used for plugs and spoons. This writer uses both rods and agrees with the experts.

The backlash is the curse of the bait rod man who has failed to realize that there is as much technique for that rod as there is for the several golf sticks. My own idea is that the chief difficulty for the fly rod user is the training of the left hand to strip and release the line as the rod is being manipulated. It does take fine coordination but this ability comes instinctively, being a matter of timing. There is plenty of writing on the subject for those interested, including catalogues of certain tackle manufacturers. But of course, the best way is to seek out an experienced fly rod man and have him teach you.

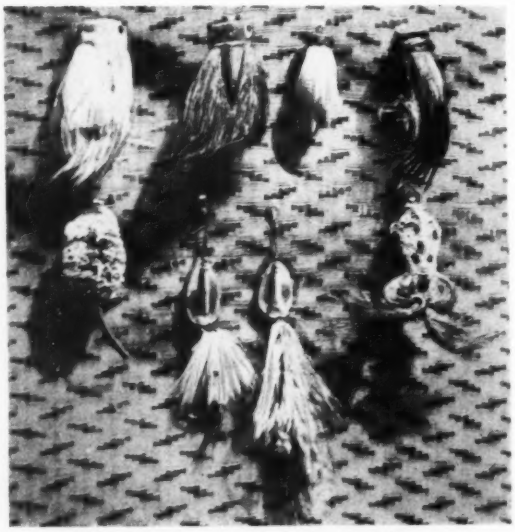
So far as fly rod equipment is concerned, the angler wishing to start may do so at an unpretentious expense. There are concerns advertising fly rod outfits for as little as ten dollars. True, the rod itself cannot be a fine one—but it will catch bass. Later, when the novice's enthusiasm has caught up with him, no power on earth will prevent his acquisition of a better rod. The cork-bodied bass bugs are very successful. Their cost is modest and they last indefinitely. I have my favorite bug, of course, from which time and again the bass have knocked the hair. To replenish this, I have conducted so many raids on a certain beautiful red-haired Irish setter that the dog growls when he sees me coming.

It has been my good fortune to be responsible for the start of several men on the fly rod, most of them having been won to it by the evidence of my rod's work which is to be seen at the end of the day when parties view rival catches. In August of 1938, at a popular camp, I took the limit steadily for six days on five different waters. During this period there were about twenty live bait disciples of Izaak Walton who got sparse results. Said they: "The bass ain't biting. Guess the moon's wrong." What they meant was that the bass weren't feeding, and it is right here that the caster enters for, covering territory as he does, he is constantly taking that occasional bass which strikes, not necessarily because he is hungry, but because he is just plain pugnacious. When a man graduates from live bait to the artificials on either the fly or bait rod, a "fisherman with a pole" becomes "an angler with a rod," his sporting side has been developed and you have a conservationist.

An interesting detail about the fly rod is that a bass, no matter how large, rarely escapes. The sensitive end of the rod never allows slack. No doubt the finest possibilities in angling exist in stream fishing for trout, a shy creature that is easily "put down" and is fished for "fine and far off." As a guide on the famous McKenzie River in Oregon advised me one day when I was using the dry fly for trout: "Your first cast must be your best cast." The bass is not so snooty. He will frequently strike at and miss a lure and instantly turn and dash back for a second try.

It is amusing to discuss with a trout angler the relative merits of bass and trout. Naturally, there is much to be said on both sides, but one fact is incontestable—that is, the bass, with fully as much fighting heart as the trout, shows up in materially larger sizes and in territory more easily accessible to most fishermen. Two pound black bass on a fly rod are common in the backwoods, while the trout addict is busy measuring his catch to make certain that it is seven or eight inches long.

The finest of tributes to the black bass was paid a long time ago by James A. Henshall in his *Book of the Black Bass, the Best Game Fish in America.* Another who loves him is former Senator Harry B. Hawes, author of the book *My Friend the Black Bass.* To Senator Hawes all bass fishermen owe an inestimable debt, for it was his ability and enthusiasm that wrote and put through Congress two laws for the preservation of the black bass. Not only did he accomplish this, but he carried his work into the states. Largely through his inspiration practically all of the forty-eight states have followed the federal enactment by prohibiting the sale of black bass for commercial purposes. In 1935 he published *Fish and Game, Now or Never,* and that book is a direct challenge to American sportsmen on wildlife restoration. As an angler, Senator Hawes advocates the use of artificial lures on both fly and bait rods; and it was he who, through his writings, influenced the author of this article to take up the fly rod for bass fishing.



Bass "bugs"—the lure in fly rod fishing

As fly rod users increase, so much the better will it be for our plucky friend the black bass. He is apparently in little danger of complete destruction, but we find ourselves going farther and farther back into the

hinterlands for trout and bass fishing. Also, when one reads that, in the year 1857, a select committee of the Senate of Ohio, in connection with a bill to protect the passenger pigeon, reported that "the passenger pigeon needs no protection, being marvelously prolific, so that no ordinary destruction can lessen the myriads that are yearly produced," it gives one pause. The passenger pigeon existed by the billions in the late Eighteen Seventies, according to Audubon himself, and has been extinct in the wild state since 1906. It became entirely extinct with the death of "Martha" in the Cincinnati Zoological Gardens in March, 1914. Museums have since been offering up to $250 for good mounted specimens.

It requires skill, but the angler with a fly rod generally gets his bass

Our two famous types of black bass, known as the smallmouth and the largemouth, are so similar in appearance that few can tell them apart, and yet, in certain of their habits, they differ surprisingly. The smallmouth, which can be distinguished by the fact that its maxillary (jawbone) extends to a vertical line drawn through the eye while that of the largemouth goes beyond, is a sportier fish. He likes the deep and cool waters. The largemouth is always found in the warm shallow areas and is a bit easier to take on artificials. Almost a hundred and fifty years ago, Lacepede, a Frenchman, named the smallmouth *micropterus dolomieu* and the largemouth *micropterus salmoides*. *Micropterus* means small finned, the Frenchman having been misinformed because the specimen sent him was minus some of his natural equipment. *Dolomieu* was the name of a French naturalist. *Salmoides* refers to the salmon family.

There are trout streams in this country, some of them in our national parks, where it is unlawful to use live bait. It is my hope that as time goes on there will be fewer and fewer of our millions of fishermen bringing in our wonderful black bass at the end of eighteen pound test lines with minnows deep in their stomachs.

Sycamore salute! — a very torch of Spring

BURSTING BUDS--A BILLION SILENT EXPLOSIONS

The Candid Camera Portrays Nature Awakening in the Trees

By RUTHERFORD PLATT

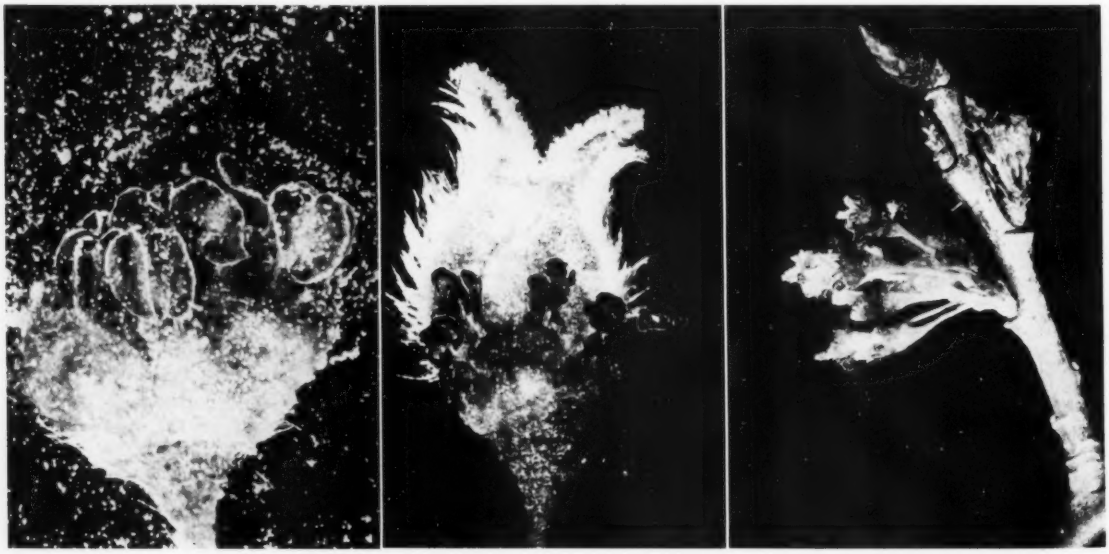
WHEN spring's surge of life rolls across the landscape, we seem to be looking at the trees and shrubs through a light green gauze. This curious effect produced by partly opening buds is one of the rarest and most delicate color effects of nature. It fluctuates through the landscape, beginning among the soft woods growing in damp places, the alders, willows, poplars, sycamores and red maples. These plants are bursting with sap because they have the quickest access to the water released in early spring. Then the progress of opening buds rolls up the hills. Later the oaks, beeches, sugar maples and elms send out their blooms; and last of all come the locusts, walnuts and hickories.

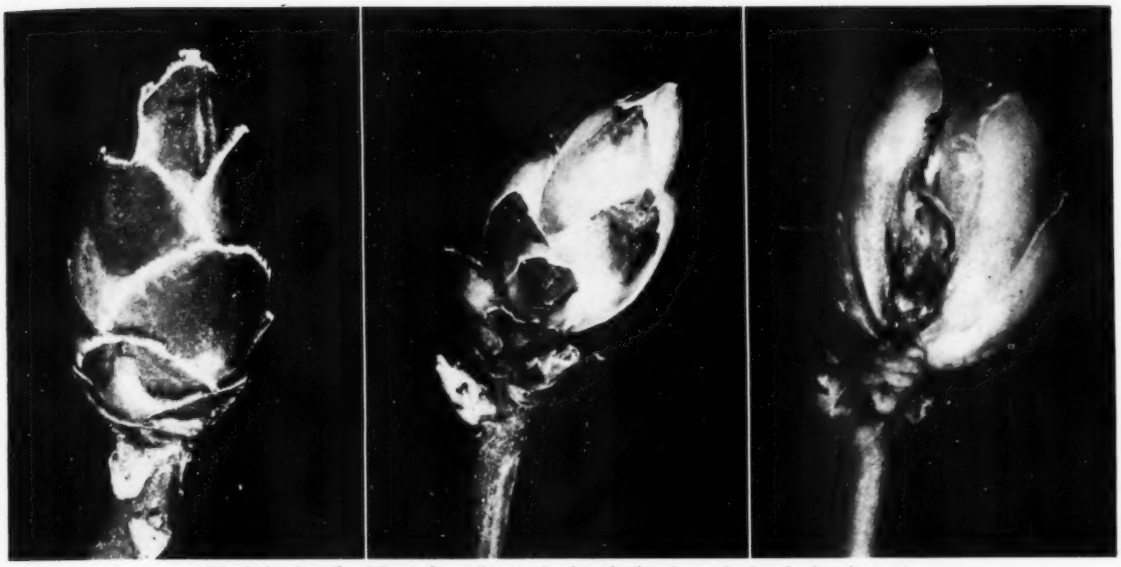
Botanists describe a bud as an undeveloped shoot. These undeveloped shoots that will eventually put the new growth of flowers, foliage and twigs on the tree are fully formed in buds by the end of August. Then the growth of these embryonic shoots ceases. The bud is protected by gum, scales, hair or resin from the rigors of winter. This protection is designed primarily to prevent evaporation rather than freezing. In the most northerly climates, where the temperature goes below zero, ice crystals are formed within the buds. These are generally in the intercellular spaces and do not damage the delicate structures except in unusually severe cases. But on the whole the cell sap imprisoned within a bud does not freeze. It is a concentrated solution with a low freezing point. More dangerous to the life of the bud would be desiccation or drying out.

This undeveloped shoot tightly compacted within the bud remains dormant from the end of August until spring growth begins. Surely this preparation months in advance is significant of the thrift and foresight of nature in its plans for plant life.

The woody plants produce three kinds of buds—flower buds, leaf buds and mixed buds that contain both flower and leaf parts. In some cases these embryonic parts are scarcely formed. They exist in the potential

Below—the American Elm. Gushing pollen—a veritable fountain of gold! Then the flower cluster. The leaf bud at the end of the twig has not yet started to open





Rhododendron (nudiflorum)—striking indeed is the handsome bud in both color and form, and beautiful in its unfolding — as shown in this series of six photographs

of the meristematic cells—that is, the cells found in the growing tips have not yet differentiated into their specialized tissues of wood, leaf, or flower. They are merely living cells impregnated with the ability to divide rapidly in accordance with the principle of growth. Many other buds, however, have carried the growth of their shoots farther so that the embryonic leaves and flower parts may be actually seen with a microscope in miniature if the winter bud is dissected. In this event an embryonic leaf cannot be spread in its usual leaf form but must be folded up tightly in order to fit within the bud.

Each species of tree and shrub has its own manner of folding these little leaves. They may be creased and pushed together like an accordion. Or this accordion folding may be combined by the sides of the leaf revolving on the mid-rib as an axis so that either the tops or the bottoms may be pressed closely together. The form which this folding takes is part of the botanical description of a tree. Also this determines the mechanical way in which a bud opens.

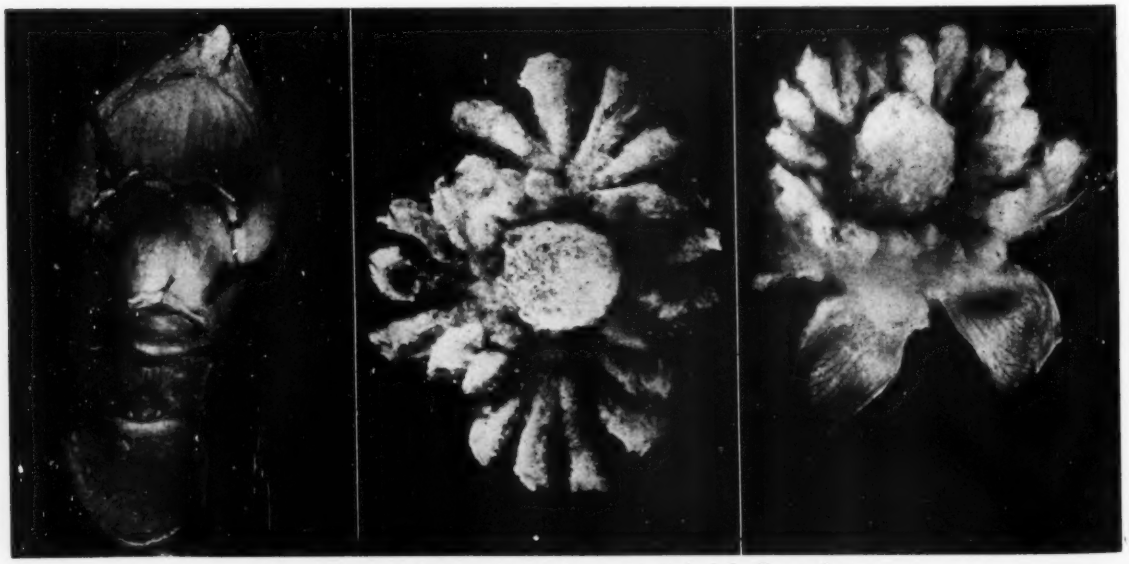
It is very interesting to watch the various methods of opening. Some loosen at the tips and the contents shoot straight out. A striking example of this is the leaf bud of the flowering dogwood. With others, especially those with overlapping scales, the bud loosens up all over. The scales seem to revolve outward all at once like little Venetian blinds, then fall off, and the contents pour out in all directions. Others appear not so much to revolve their scales as simply to cast them off, and the opening resembles a miniature explosion. Another type of bud is that which does not have outside scales, or has left them off early in the winter. The exterior of the bud consists of the embryonic leaves

Gray Birch—the bud awakens, — slowly the leaf emerges,—then, the perfect leaf

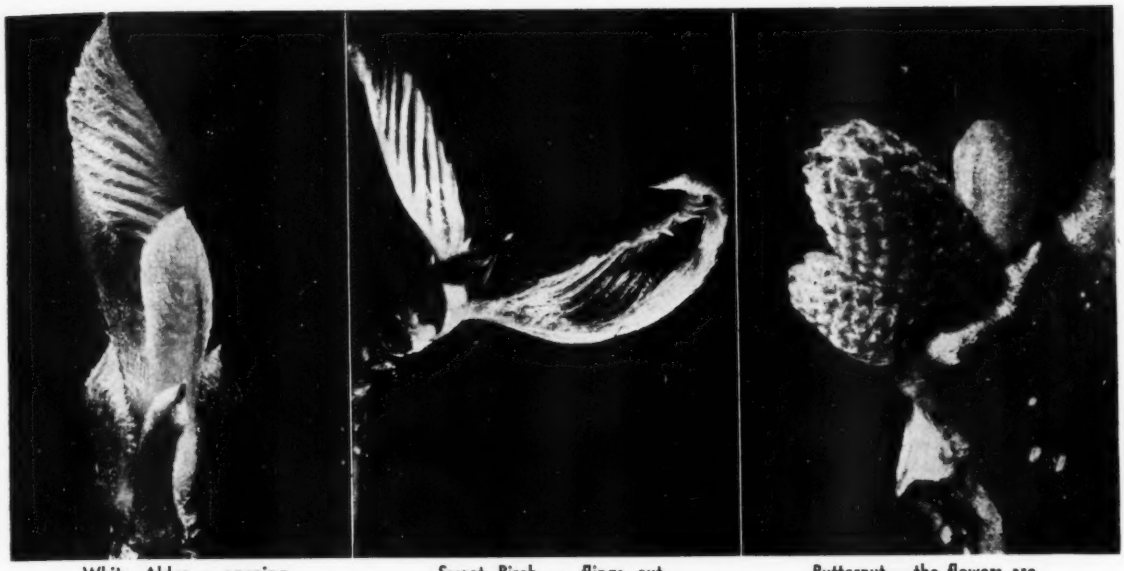
themselves, and these simply begin to grow, as seen in the bitternut hickory.

All trees are flowering plants. In a botanical sense the flower is the organ of a plant that produces seeds. Thus, flowers may or may not have colorful parts such as sepals or petals. A flower does not even have to have both stamens and a pistil. But to be a flower at all it must have at least a stamen or a pistil. Because tree flowers are so inconspicuous, many people think that trees do not have flowers. Of course, fruit trees are an outstanding exception as members of the rose family, the apples, cherries, peaches, all have very beautiful rose-like flowers. Other trees with showy flowers are horsechestnut, catalpa, magnolia, locust, redbud and hawthorn. The dogwood appears to have colorful petals, but actually the dogwood flower is an inconspicuous green affair and the showy parts, mistaken for the petals, are leaves called bracts. In the pine family the cones are the flowers.

Most of the familiar American hardwoods have tiny delicate flowers without petals. These are wind-pollinated in contrast to the plants that have showy flowers that attract insects. The wind-pollinated flowers bloom very early in the spring while days are still chilly and nights frosty. In some trees the flower buds open before the leaf buds. Examples are willows, poplars, maples, birches and elms. The ash blooms a little later, but still before the leaves. Trees blooming in the midspring at the same time as the expanding leaves are oaks, walnuts, sycamore, beech, sweetgum, mulberry



Horse Chestnut—the gleaming bud in winter! Bud of the flower cluster in the heart of the winter bud, surrounded by undeveloped leaves



White Alder — opening bud, of ethereal beauty

Sweet Birch — flings out lovely wings as it unfolds

Butternut — the flowers are like a cluster of soft cones

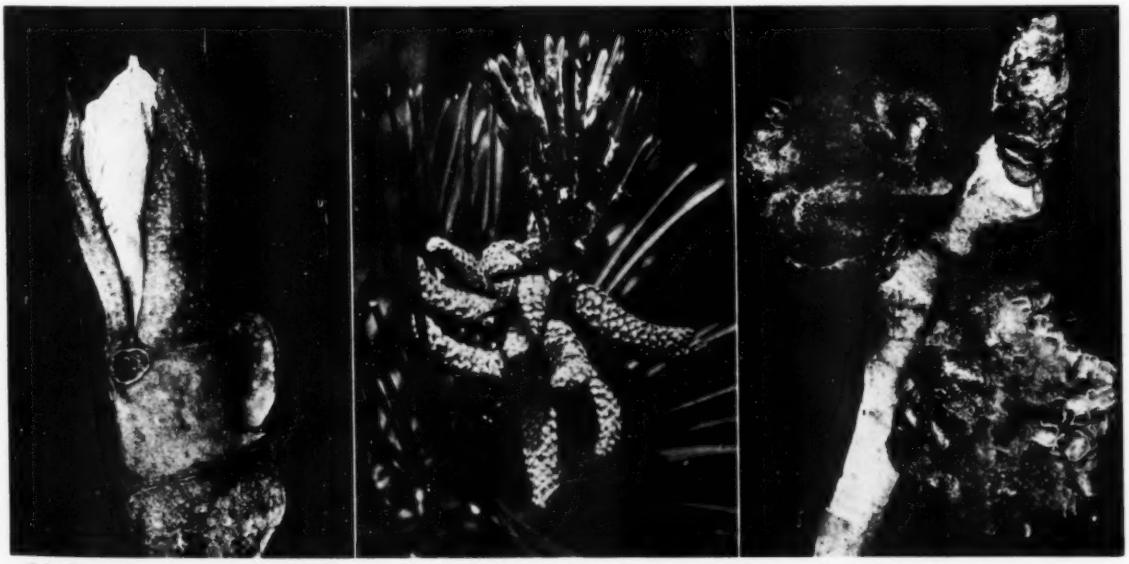
and sassafras. A little later, when leaves are almost fully grown, the hickories produce their flowers. One of the latest of the hardwoods is the linden, blooming in June and July after the leaves are fully out. The linden flower, although an inconspicuous light green in color, has nectar glands and a fragrance attracting insects to assist in cross-pollination. Of all the trees and shrubs the most "out of season" bloomer is the witchhazel. This blooms in the late fall. In a sense the witchhazel is the earliest rather than the latest to bloom. Its flower buds spring to life and the flowers do their work even before winter sets in.

Expert observers of tree flowers note that these flowers are staminate (with stamens only) or pistillate (with pistils only) or combined. The latter, of course, considered to be the normal flower form, combines pistils and stamens in the same bloom as most of the showy flowers of the plant kingdom do. A division of some of the native American trees into these types of flowers is as follows:

Perfect flowers—those that have both stamens and pistils in the same flower: Linden, mountain ash, tulip tree, black locust, redbuds, dogwood, elm, sorrel, catalpa, hawthorn, witchhazel, and fruit trees.

Monoecious—stamens and pistils in different flowers on the same tree: Birches, hornbeam, walnuts, hickories, chestnut, oaks, beech, sweetgum, sycamore, and pines.

Polygamo-Monoecious—like monoecious, but often developing perfect flowers: Horse (*Continuing on page* 253)



Tulip Tree—the opening bud is typical of the cavalier character of this tree

Pitch Pine — the picturesque cones are the flowers

Slippery Elm—the opening flower buds are of the exploding type

GROUSE FEED FROM HIS HAND

By BEN EAST

Bill King told me his story

MANY men hunt grouse. Bill King feeds them.

Excepting perhaps the wild turkey, I suppose most sportsmen will concede that the ruffed grouse has no peer among American game birds for wildness and wariness. It's easy enough to entice pheasants and quail to a winter feeding station. They are grain eaters, easily lured to a sheltered fence corner by a handout. Not so the grouse. He takes to the bare treetops for his winter meals, faring nicely on the buds of birch, aspen and other trees.

Although you may never have heard of Bill King, he was featured many years ago in a short wildlife motion picture, and for a while a small measure of fame came his way. But it was short-lived, as fame is likely to be, and since that time Bill has slipped back into the obscurity of an old woodsman, living a quiet, hermit-like existence in a little cabin on the shore of a lovely forested lake in the northern wilderness.

But for all his obscurity, Bill King does something that nobody else, so far as I can learn, has been able to do. He tames and feeds wild ruffed grouse at his cabin door. He's been doing it for a quarter of a century, each winter dusk and dawn. He tosses corn to the birds from the doorway, he watches them eat at small boxes beside the steps, he walks among them, he even feeds them from his hands, and in years past he has enticed them inside the door. When spring comes and the birds scatter to nest in the nearby forest, they still remember Bill, still know him as a friend, still tolerate him on the most intimate terms.

How do I know Bill has done these things? I spent a winter evening with Bill last year, at his cabin on the shore of Burt Lake, a dozen miles inland from Lake Michigan, and watched the grouse gather and feed. After that no doubt could remain about the other things he says he has done.

I first heard of Bill King back in 1924, when the Michigan Conservation Department starred him with his grouse in a movie short entitled "Bill King, the Bird King," but after that I heard little more about him until 1932. Early that winter a story drifted down to me that King was still feeding partridge at his door, and I drove up to visit him. I found him ill at a neighboring farmhouse, unable to reach his isolated cabin, much less to take care of his birds.

Late the next winter I had a letter from him saying he was back in the cabin and had the grouse coming to the door once more; but I was busy and the winter slipped away before I could make the 200-mile drive up

In the late afternoon he scattered corn before the cabin

to Burt Lake. From time to time after that, other letters came telling the same story, but I was still busy and I kept postponing the trip.

Then in March Bill wrote, "I am feeding the partridge as usual. Of course, not so many as long ago, but I haven't missed a morning this whole winter. At the break of day I call from one to three dozen to my cabin door. I also feed them late in the evening. They are more plentiful than a year ago, though a little wilder and more difficult to feed."

The letter was written in the large, labored script of an old man, and I decided to wait no longer. I wanted to see those grouse gather there at the cabin door in the dusk of evening, coming at the call of a man who had learned to tame the wildest of the wild.

At the hamlet of Alanson, where I stopped to ask the way to the cabin, they knew Bill King. "He feeds birds," a woman in the postoffice told me. "He won't cut his hair for fear they won't know him."

Because the narrow woods road from the paved highway to Bill's place lay under deep March drifts, I left my car and went in on foot the last mile and a half. Along the way I encountered "No Hunting" signs nailed to trees. Bill does what he can to save his grouse from guns. In the old days he used to do a little shooting, but it's been twenty-five years since he killed a bird, and today, he admits, he'd about as soon shoot a man as a partridge.

Right—The last mile and a half to Bill's clearing I covered on foot along a woods road

Bill's cabin stands in a tiny clearing near the edge of Burt Lake. There he lives with his son, Guy, who is past middle age, big, quiet and inclined to dislike the isolation and loneliness of the place. But while Bill is alive they will stay on at the cabin.

Through a long afternoon while dry firewood crackled in his ancient, rusty stove, Bill told me the story of his grouse. Now nearing the eighty mark, he came as a lad of fifteen to the Burt Lake country from Ohio by way of Lake Erie and Lake Huron on a wood burning steamer. Here he found a country of big forests that had hardly known the ax—or fire.

Of course Bill neither began feeding partridge all at once nor by accident. It was only after many years of coaxing and thinking up ways to overcome their natural shyness that the birds finally came to

Below—I had seen magic, the magic of an old man taming the wild, and bringing it to his door

the door of his cabin for corn. Dates and events are growing a bit hazy in the old man's memory now, he'll tell you, but not the year he fed the first grouse. That is clearly fixed in his mind. "The summer England went to war with Germany the first one come," he says simply.

In the spring of that year, while he was painting a boat in front of his cabin, he saw a grouse walk into the little clearing. She came boldly up to him, showing no fear, and Bill began to hope that his dream of feeding wild partridge would come true at last. He saw the bird at frequent intervals, and she grew even tamer as the days went by. Then May came, and she was gone, and Bill surmised she had retired into the woods to nest.

In August she came again to the clearing, now with her brood of chicks, and Bill set out to win the confidence of the youngsters. The result was that when winter came wild grouse took corn at his cabin door.

That was in 1914. He has never missed a winter since, save one, the year he was sick. He went back to his cabin that spring and when November rolled around once more and the snow came, the grouse returned. After that Bill no longer minded the months he had spent in bed, although since that time there haven't been as many birds. The flock has never regained its former size. Twenty to forty is now an average count.

When I asked him about the likelihood of a stranger seeing his birds, the chances of making pictures, he grew hesitant. "This morning I had maybe two dozen," he said. "I was a little late getting down to feed. I get up every morning all winter before daybreak, and feed my birds, and then go back to bed. I was a little slow this morning, and I could hear them outside the door while I was dressing. When I opened the door they were all around. It was too dark to see them plain, and I wonder they could see the corn. They wasn't very hungry. Stayed for maybe ten minutes, and then it started to get light and they was gone.

"Evenings they come, but not as many as in the morning. Last night they was here exactly at seven o'clock. Maybe a dozen of them. If you stayed this evening, we'd see a few. But I don't know about pictures—it'll be pretty dark. And in the morning they'll leave before it's light."

When I explained that we would work with flash bulbs, that darkness would be no handicap as long as there was light enough to locate the birds in the finder of the camera, Bill became a shade more optimistic. "Maybe we can make it," he said finally. But I could see he was still dubious. He had never seen a camera used except in full daylight.

As the afternoon drifted along and he told me more about the birds he had fed and tamed I could detect in the old man a growing wistful eagerness to have me believe his story. He seemed to realize that it wasn't an easy tale for a stranger to credit. During those twenty-five years he had done things with wild grouse that nobody else had ever done. I could see that he was thinking about it, and wondering whether I thought him wholly truthful. "You'll believe me, because you know about birds and such things," he said a couple of times. "Lots of folks wouldn't." Then he added, quietly: "Wait till evenin'. You'll see."

After supper Guy set the dishes aside on the plain board table without washing them, and when quiet had descended upon the cabin Bill said, "They'll know there's a stranger here. They'll know it even if you don't talk. They can tell from our voices that we're talking to a stranger." I then told him to talk to me no more.

When six o'clock came and long tree shadows filled the snow-covered clearing, the partridge had not yet arrived. Then 6:15, and 6:30, but still no grouse. I was beginning to feel doubtful. Was the old woodsman's imagination tricking him? Were the birds he saw at his door each morning and evening only the ghosts of grouse begotten of his memories and the experience of other winters?

Then Bill leaned across the table and touched my sleeve. Out there at the edge of the woods a grouse was circling the clearing, as unafraid as any farmyard hen. Twenty feet beyond her came a second, and in a thicket beside Bill's wagon shed I could see two more, walking slowly toward the open. I counted six, then seven. They were all about the clearing. Two stood waiting under a decrepit wagon in the shed.

At the very edge of the brush their courage seemed to falter. They wanted to forget their wariness and come boldly out to Bill's feast of yellow corn; but instinct warned them that danger might lurk in the open and they hung back, waiting for deeper dusk.

One minute we could see eight or ten birds, the next only one or two. They found a small patch of bare ground where the melting snow had uncovered corn scattered in November. Three or four of the bolder ones moved slowly over this area, picking up the stray, winter-soaked kernels, but none would venture across the clearing to the door where a fresh offering waited in plain sight. "The snow's gettin' thin in the woods," Bill commented. "They haven't been real hungry the last two or three days."

The dusk was heavy in the cabin when Bill stood up from his chair and opened the door quietly but not stealthily. He called the birds in a low, deep voice, so that it sounded like "Chig, chig, chig."

Three grouse came from the thickets, while another moved from the shelter of the wagon, and back among the trees I saw others walking hurriedly in. Two left a patch of bare ground at the woodpile and came toward the door. When I looked over Bill's shoulder as he stood in the doorway three birds were at the corn, half a dozen others waited cautiously, walking back and forth a few yards away.

They were there as they had been at dusk and at dawn each winter day for twenty-five years, no longer the wild grouse that had gathered in the thickets a half hour before. With darkness now closing in, there was nothing to fear in the clearing save Bill King, who stood talking to them in low, reassuring tones, and it was plain they did not fear him at all.

"They'll only stand for one picture," Bill had warned me when I tested a couple of flash bulbs in the cabin in the afternoon. "That light will scatter them."

But the grouse showed no alarm at the flare. I let the door swing half shut to cover my movements behind Bill, turned to the table, changed films, replaced the bulb.

My first picture caught only one bird. That one never blinked. I worked in feverish haste till I had made four or five shots, and then slowed up to await a bigger group. Presently I got six of them at the corn together, the nearest less than two yards from the cabin.

I had seen magic, the magic of an old man taming the wild, bringing it to his door at the sound of his voice.

As I walked out on the woods road later that evening, under a full March moon, two ideas came to me. I should like to suggest that a (*Continuing on page* 252)

REMEMBER THE DOG WITH THE COLD NOSE!

By MARK HANNA

ON A warm, sunny, spring morning last year, the Pacific Northwest's Portland *Oregonian* carried a news story about a dog with a cold nose. It was an insignificant little yarn and the newspaper included it on one of its inside pages. On that same morning, dire events shook the world. German Panzer divisions and dive-bombers had backed several hundred thousand British and French troops into the beaches at Dunkirk. France appeared doomed. The invasion of Britain was whispered. Yet, in the face of all this, the dog with the cold nose got much attention. People in the Portland area talked about him, laughed and slapped their thighs all day. What was this remarkable story?

It seemed that shortly after midnight, the dog's master had heard a strange noise out near his chicken-coop. Jumping out of bed, he grabbed a double-barreled, twelve-gauge shotgun which he kept handy and started toward the coop, clutching his thin nightgown about him. This nightgown had a lot to do with the story. It really wasn't much of a gown at all; it was hardly more than a skimpy little shirt with no more tail in back than a guinea-pig's.

As the man crouched and stalked toward the coop, holding his gun in readiness, his faithful dog slipped up quietly behind him. Now either the beast was affectionate or he disliked this slow stealth. Just as the man was about to enter the hen-roost, the dog impulsively leaped and nudged him from behind. The effect was bleak. Keyed up with excitement and shivering from the cold, the chicken-fancier jumped into the air, jerked at the triggers of the gun, and both barrels boomed out with a deafening blast. When the smoke had cleared and the surprised dog had run back under the house, the man surveyed his ruin. Fifteen prime Plymouth Rock hens lay dead. He had assassinated them. The thief, if any, had escaped.

Why did this story of the well-meaning dog and his instinctive gesture crowd the limelight with really important events? Probably because this little tale had to do with a very simple and very human experience. It was familiar, homefolksy, intimate. It was about something that could have happened to anyone. It needed no explanation. It was down-to-earth and well within the imagination of anyone who read it.

Panzer divisions and the beaches at Dunkirk were still vaguely far off to most people. The threatened collapse of France was just too big to contemplate. The invasion of Britain seemed something like our own national debt. It was unfathomable at that time to the average man. The big things were too remote. Not so, the dog with the cold nose.

Strange as it may seem, this simple story may well serve as an object lesson to all interested in the conservation and protection of the nation's forests. Another fire season will soon be at hand. Another season will be here with the necessity of capturing the imagination and interest of the American people to assist in the vital work of fire protection and prevention. It will again be necessary for foresters and others to go before groups of people and talk. That talk must get interest. It must get action.

Shortly after this dog story appeared in that Portland newspaper, John R. Bruckart, supervisor of the Willamette National Forest at Eugene, Oregon, called in several men. He wanted to discuss the possibility of a series of radio talks on forest fire prevention. His opinion and that of others was that the old appeals, in the main, were dead. They were inclined to be dull, unresponsive, apathetic. The public had gone stale. They had heard isolated statements such as "Don't Burn the Trees," "Save Our Forests," and "Help Prevent Forest Fires" year after year. People were fed up with the old slogans. They were fed up with mere recitals of horror stories and astronomical statistics. John Q. Public reacted to statistics of forest holocausts as he might to figures on the famine in China or the earthquake in India. He wasn't interested.

Then someone thought of the dog with the cold nose. Here was a simple, homely little story with plenty of punch. For a day or more it almost pushed the staggering British Empire off the map. When it appeared, it got as much attention as the Third Reich and the desperate *poilu*. Couldn't stories with similar appeal but different content be used in forestry? Couldn't simple, human, down-to-earth forest material be presented in a positive way to stir interest and lead into the real problem?

One of the first radio talks to come out of this conference was on the beaver. The beaver, as foresters know, is a cute, smart little beast with an interesting bag of tricks well calculated to get anybody's attention. He is a sure-fire little actor of the woods. The opening paragraph of the beaver talk went on the air something like this:

"The beaver is perhaps our best citizen. When necessary, he works about all the time; loafs very little. He's good to his wife; and being a family man, he likes to provide a good roomy house with plenty of food. This is for the regular meals as well as many a midnight snack. He has four bright orange-colored teeth in front to gnaw down trees. He builds marvelous dams of brushwood and stones; and when something disturbs him, he slaps the water with his broad, scaly tail. The beaver is quite a

spruce chap; likes to freshen up a bit after work and comb his hair. Then, to show us he's quite human after all, he scratches. Yes, the busy little beaver sometimes has the itch."

The beaver talk continued with some of the interesting history of the fur trade and more details as to why the beaver builds a dam and how he does it. The narrator told of the unusual skill and intelligence of this valuable little woods animal in a chatty, informal fashion. At the tag end of the talk, it was a simple matter to make the transition from the beaver as a wasted natural resource to the timber with its present yearly waste by fire.

In each radio program presented, it was resolved to give the public interesting factual or narrative material drawn from forest backgrounds with all of their colorful associations. Each talk was to end with some strong case made out for definite help in fire prevention work. Johnny Appleseed, patron saint of American forestry, provided the lead and main body of another talk:

"Ever hear of Johnny Appleseed? His real name was Jonathan Chapman, and he came into Licking County, Ohio, about the year 1801. Leading an old pack-horse loaded with apple seeds from the cider mills of Pennsylvania, Johnny found his first patch of land, cleared it, and planted his first apple trees. With his life work started, this eccentric gentleman of the apples who wore a coffee sack for a coat and a mush pan for a hat, pushed on. Through the wilderness trails of Ohio and Indiana, Johnny Appleseed roved and planted. The Indians thought him a strange medicine-man. The settlers thought him a little queer, but they liked him and gave him a home. Johnny never married. He had a girl once, but she kissed another man. The patron saint of American forestry decided to wait for the angels in heaven. He hoped they would be more reliable."

As with the beaver story, this talk on Johnny Appleseed continued with interesting details of Johnny's useful and adventurous life. Johnny was a man of peace, but he lived in stirring times. He heard the beat of the Indian war drums, saw the painted savages glide swiftly through the forest trails. More than once he warned the settlers; and, indeed, Johnny saved the citizens of Mansfield, Ohio, from massacre. Johnny was a conservationist, appalled by the frontier waste of woods and wildlife. It made a natural climax to conclude this story with a strong and vital plea for conservation today—for cooperative fire prevention.

The bear is the fat Happy Hooligan of the woods. Perhaps the most remarkable thing about him is his cosmopolitan appetite. He eats anything a pig eats; then he eats the pig. Another talk in the radio series started off with a question:

"Have you ever seen a bear eat? His digestion is terrific! He digs up roots and nibbles fresh, green grass. He likes watermelon, seeds and all; then he may top off on a few fat mice. In oak country, he munches acorns by the pound. The bear grows huge. Sometimes he eats dandelions or perhaps a mess of ants. At other times, the bear may prefer apples or, if he is in the mood, strawberries, with or without cream. In a gay and careless moment, a bear may snatch a wandering hen or a pigeon. Then, he may grab a sheep. The bear has a very sensitive nose, but that doesn't cramp his meals. He'll go right straight through a good bucket of garbage. He thrives, grunts, and gets fat."

The whole effort with this bear story as it continued was to emphasize the comic good nature of this curious clown of the woods. Children especially responded to this talk. The bear story had a moral, too—burn the trees and you destroy the wildlife.

The logger as a subject was, of course, a "natural." People are always interested in people. The rough and tough men who led a life of booze and battle in the white pine of old New England were the best possible copy. It was felt that this opening was sure to create interest:

"A strange hairy beast came stomping out of the Maine woods some two hundred years ago. He roared and bellowed. He kicked and bit; and when his enemy was down, he jumped all over his face with his heavy calked boots. He had a passion for red; wore flame-colored woolen underwear, a fireman's red shirt, and sometimes a red sash. He slept on hay, ate beans for breakfast and washed them down with fierce black tea. He worked hard and late; and when the logs were in, he brawled and fought in the lumber towns of old New England. He was the old time logger and his race is just about run."

This talk on the logger was developed with concrete details of his hard and picturesque life and specific instances of his broad and lusty escapades. The old time logger gave little thought to the problem of fire prevention. It hardly seemed necessary. There were vast and terrible fires, great areas of country burned, but the timber always seemed to be inexhaustible. Today, of course, the problem of fire is serious. The fire menace and the necessity for doing something about it made a fitting end to this program; there was no complicated transition involved.

Since plywood was the new wonder-child of the Douglas fir country, the men of the Forest Service thought that perhaps a program might be built around it. It seemed that plywood and fire control would naturally go together. The script-writer had some doubts as to this subject. Plywood meant a technical process. In itself it was not especially interesting to people generally. Technical descriptions were often dull.

However, after considerable research on the subject of plywood, the script-writer did dig up two arresting facts. The first concerned an Egyptian mummy case perhaps four thousand years old which rested in New York's Metropolitan Museum of Art. This case was made of ancient plywood. The other fact concerned the wreck of the Union Pacific Streamliner "City of San Francisco" in August of 1939. Some of the cars had plywood panels. These panels had withstood the shattering crash of the wreck. Both of these facts had story possibilities.

The script-writer chose the railway wreck; he decided it was more exciting and could be dramatized more effectively. The beginning of the plywood talk went on the air in a form such as this:

"On the summer night of August 11, 1939, a blunt-nosed, chrome-yellow, super-streamliner of one of our western railroads eased quietly out of the terminal on Madison Street in Chicago. Gathering speed rapidly, the whirring diesel engines of the powerful locomotive soon had the cars of the longest train in the world snaking across the flat corn lands of Illinois and Iowa. With the first pale streak of dawn, the train whisked across the railroad bridge at Council Bluffs and slowed to a stop at Omaha, Nebraska. All that day the train streaked due west across the endless plains of Nebraska and Wyoming into the sagebrush wastes of Utah and Nevada.

"With the speeding train still some three hours to the east, the steel girders of the railroad bridge over Humboldt River Canyon, two hundred and fifty miles from Reno, began to tick and thump in the first cool of the desert night. In those last few hours or perhaps some time before, someone set a trap. Someone drew the spikes, moved one of the heavy steel rails of the track. He left unbroken the wire for the automatic block signal. Night closed down on the Nevada desert.

"At twenty-five minutes after ten, many of the passengers had gone to bed. Some were asleep. Others talked and drank in the Club Car. Ahead in the engine cab, engineer Edward Hecox peered grimly at the lighted rails. The black ties were a slick blur in the night. Hecox shifted the throttle, slowed the (*Continuing on page* 253)

EDITORIAL

WILL CONGRESS ACT?

The Joint Congressional Committee's report to Congress, the main features of which were presented on page 182 of the April issue of AMERICAN FORESTS, follows closely in its findings of fact the presentation made by the U. S. Forest Service, while its recommendations constitute virtual endorsement of the program proposed by the Service. Unanimous approval will be given the proposal to increase from $2,500,000 to $10,000,000 a year the authorization for federal cooperation in the protection from fire of private and state forest lands, and to make the full amount of the new authorization available within four years. Equally commendable is the proposed use of federal funds for similar cooperation in the protection of forests from insects and diseases.

The recommendation likely to arouse the most controversy is that the federal government withhold assistance in fire control and other activities from states which do not, within a period of from three to five years, pass legislation calling for minimum forestry practices on private lands; with the further proviso that both the legislation itself and the standards of enforcement shall be satisfactory to the Secretary of Agriculture. The only indications as to what the Committee considers satisfactory "minimum" practices are these:

"Using forest-land resources as permanent resources, so that they afford added security and stability to dependent families and communities; so that they may contribute permanently to regional and national welfare and the national defense. . . . Public welfare requires placing all commercial forests under an intensity of forest management commensurate with the relative importance of their major uses, their productive capacity, and their economic environment."

These objectives apparently envision a range in intensity of required practice that might vary all the way from mere fire control to sustained annual yield, depending on the circumstances surrounding individual properties and the communities dependent thereon. Many states and private owners, however strong their confidence in the Secretary of Agriculture, will probably hesitate to give him a blank check of this sort without more specific information as to how large an amount he is apt to regard as reasonable.

The American Forestry Association is on record as favoring the use of the police power of the states to safeguard the public interest by requiring that "all forest lands not to be converted to some other use be so handled as to maintain them in a productive condition." The Committee's proposal does not actually force any state to enact mandatory legislation or to obtain the Secretary of Agriculture's approval of such legislation, providing it is willing to forego federal aid as the price of maintaining its independence. On the other hand, is it sound policy for the government to cripple a state's activities in fire control, which is universally recognized as the indispensable basis for all forest practice, merely because that state does not see eye to eye with the government as to the next step forward?

Another doubtful recommendation is that for the federal leasing of forest lands. At least the bills for this purpose which were before the last Congress seemed to The American Forestry Association to involve so many difficulties and complications as to make the plan administratively and financially impracticable. To put the federal government in the business of growing, harvesting, and marketing the products from thousands of farm woodlots and other forest properties would certainly be an enterprise of doubtful efficacy.

Surprisingly enough more emphasis is placed on the use of federal funds for the purchase of state forests than of national forests. While an increase in the authorization under the Fulmer Act to $10,000,000 a year may not be unreasonable, why would not a similar increase in funds for the expansion of the national forests be in order? And why should there not be special appropriations for purchases in particularly critical situations, such as the hardwood region of the Lake States and important districts of Washington and Oregon, which the Committee refers to as constituting major forest problems?

Most of the other recommendations of the Committee, including additional cooperation with private owners, forest credits, forest research, more intensive management of the national forests, equitable contributions to local governments in lieu of taxes, and especially the speeding up of the forest survey, will probably meet with general acceptance. In view of the deterrent effect of fire losses on the practice of forestry, and of the government's present activities in the insurance of agricultural crops, some reference to the subject of forest fire insurance would have seemed appropriate. The Committee's reference to forestry as "an important segment of the broad agricultural economy" will be heartening to those who believe, as The American Forestry Association does, that the Forest Service and the national forests should remain in the Department of Agriculture.

All in all, the Joint Committee has presented a program which deserves sympathetic but critical study and prompt action by the Congress of the United States. Will the Congress act?

TWO THOUSAND MILES WITH A PACK TRAIN

On the Trail With a Forest Officer Forty Years Ago

By L. A. BARRETT

TO THE forest officer of 1940, traveling in a rubber shod, six cylinder "gas burner," a 2,000 mile trip over national forest land is a short and easy journey. But to the forest officer who was on the job at the turn of the century, and who traveled on an iron shod, one cylinder "hay burner," it was a real chore requiring months of hard, rough riding. Nearly every forest officer today is familiar with the 1940 method of transportation. Few still living ever experienced both the pleasure and the hardship of a summer-long pack trip.

On April 1, 1903, I received an appointment as forest inspector in the General Land Office, the agency that prior to February 1, 1905, had jurisdiction over the forest reserves, as our present national forests were then called. A month later, after "learning the ropes" in Washington, I received orders to proceed to Wyoming and investigate the boundaries of the then Yellowstone Forest Reserve with a view to determining what eliminations or additions should be made to the forest. This was the largest forest reserve ever created in the United States outside of Alaska, and there was much local opposition to the inclusion within the reserve of considerable so-called "grazing land."

On June 8, our party left Cody with an outfit of five saddle and ten pack horses. There were three forest rangers along as assistants. On the Greybull River the party was joined by A. A. Anderson, who was at that time special superintendent of the Yellowstone Forest Reserve. Our general route took us up the east boundary of the Shoshone division, then around through Gardner, Montana, and down through the Yellowstone National Park into the Jackson Hole country; from here we crossed Teton Pass into Idaho, and made our way around into Star Valley, Wyoming. Then around to the head of Green River and into the Wind River Mountains; across a corner of the Shoshone Indian Reservation to the head of Owl Creek, and back to Cody by way of Wood River, arriving there on September 17. We were on the trail just 102 days.

The distance around the the boundaries of the Yellowstone Forest Reserve by section lines was 1,096 miles. According to my diary, I actually traveled 2,087 miles in scouting out the boundary—or an average of about twenty miles a day. The pack train, taking advantage of all possible short-cuts, traveled about 1,700 miles.

We traveled in rain or snow part or all of twenty-six of the 102 days. The party slept under a roof only five nights while on the trip. Our lowest camp was near Livingston, Montana, at an elevation of 4,700 feet; the highest was on Muddy Creek, in the Wind River Indian Reservation, Wyoming, at 9,500 feet elevation.

My saddle horse, a big gelding borrowed from Colonel William Cody (Buffalo Bill), was ridden on the entire trip. This animal was selected from a band of a hundred or more, and was as tough as he was ornery. Three of the pack horses used on the entire trip were rented from Jesse W. Nelson, then a forest ranger stationed near Cody. There is quite a story connected with these horses. Nelson offered to sell them to the United States for a very modest price, but my definite instructions were to rent, not buy. As a consequence, the rental came to more than they could have been bought for and Nelson still owned the animals after the trip was completed.

There were no eight-hour days or five and a half-day weeks on this trip. The party worked every week-day, every Sunday, and the 4th of July. And it was a

Oldtimers—Forest officers at Cody in June 1903. Front row, left to right: J. W. Nelson, Goodman, Hunter and Ruff, and one with name unknown, Boyd, Woods and Supervisor Pierce. On porch Superintendent Anderson, and Gebhart

ease of "early to bed and early to rise." We were usually on the trail by 7 a.m., seldom made a stop for lunch, and went into camp anywhere from 2 p.m. to 4 p.m. in order that the stock might have plenty of time to rest and graze. By taking proper care of the saddle and pack stock we were able to make the whole trip with few changes of animals.

On this trip I was not only chief of party but did much of the cooking for from five to eight men that usually comprised the party. I also did my share of the packing.

For three days — September 10 to 12 — we were snowed in by an early storm near the head of Owl Creek on the Shoshone Indian Reservation, and had to break trail through from one to five feet of new snow to get over the high divide to Wood River, twenty-eight miles distant, where supplies were obtainable. When we broke camp on the morning of September 13 the party of five men had no provisions left but a few dried onions. That evening, at Woods River, after thawing out before a big fire, we certainly did justice to the ranch house supper of beefsteak, mashed potatoes, gravy and hot biscuits.

That we were snowed in was my fault. I spent so much time chasing a big wolf and several coyotes on the afternoon of September 9 that I missed camp, which had been sent on ahead as usual, and laid out that night under a pine tree, with my horse staked nearby in a thicket of mountain willows. By the time the camp was located it was too late to start over the divide.

There was much controversy in the local papers about this trip and what the party was supposed to do. Some said that we were traveling in state at large public expense, while others contended that the party was a bunch of hard working public officials. A Cody newspaper of July, 1903, contained the following item about the work in that part of Wyoming: "Mr. Barrett and party are getting along nicely with the resurvey of the Reserve boundary. They are up at five in the morning, working until sun-

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The pack train in Yellowstone National Park in July

Snowed in on Owl Creek, Wyoming, in the middle of September, the only shelter the party of five had for three days and nights

The pack train breaking camp near Cody in June. Special Superintendent Anderson is in the foreground

CHARTING THE FUTURE OF FORESTRY

CONSERVATION LEADERS COMMENT ON THE RECENT REPORT TO CONGRESS OF THE JOINT CONGRESSIONAL COMMITTEE ON FORESTRY

Nearly three years' study by ten members of Congress; several public hearings in centers selected with reference to the forest and lumbering regions of the United States; extensive correspondence and individual conferences participated in by the several committee members, and more than 2,100 printed pages of testimony are reflected in the Report of the Joint Congressional Commitete on Forestry, as presented simultaneously to both bodies of Congress on March 24, 1941.

In condensing this into forty-four pages on the "Forest Lands of the United States" much of value was eliminated, but special importance is given the committee recommendations set forth in the last five pages. These constitute a chart of our national forest policy which may affect federal and state legislation for several years to come. They are, therefore, deserving of careful study. The American Forestry Association has asked several leaders in forest thought to present their ideas regarding the report.

HON. GIFFORD PINCHOT, First Chief Forester of the United States

"Three out of the five specific questions recommended by the President for study by the Joint Committee are concerned with public control of privately owned forest lands. Of 500,000,000 acres of commercial timberland, 400,000,000 are privately owned. Private lands furnish 96 per cent of our forest products. They include 90 per cent of the productive capacity of our forest soils. Nearly all of them are being abused. None of them are safe.

"The Committee's report contains absolutely conclusive arguments why forest devastation should be stopped by public control. Then it proceeds to recommend a solution which is, in fact, merely a postponement of effective action —State control under Federal Supervision.

"The lumbermen are most powerful politically in the States which need control most. They will have to fight effective State control to the last, because any State which enforces control, in effect gives a bonus to the lumbermen of any competing State which does not.

"The best that can be said for the Committee's plan is that it recognizes the principle of public control. But it provides no effective method for making that principle work.

"As Governor for eight years of Pennsylvania, the State which led, and still leads, in State forestry, I say with knowledge and entire conviction that such a plan cannot succeed."

WILSON COMPTON, Secretary and Manager of the National Lumber Manufacturers Association

"In this era of planning for sustained yield management and orderly utilization of forest lands, we can all take courage in the Committee's conclusion that with a reasonably good forest policy, gradually converted into nationwide action, we need fear no national shortage of timber, either for domestic consumption or for export. Examples of good forest management on private lands, as included in the report, give only meagre indication of the extent to which forest industry and private landowners have voluntarily assumed a trusteeship for permanent management of their lands. They indicate, however, the desirability of a national policy which will encourage more widespread and more general acceptance of individual responsibility.

"In discharging itself from further activities the Committee has apparently done so in an atmosphere friendly to the forest industries and considerate of their difficult problems. The recommendations, if followed, will sustain what we have long believed, namely: 'Good forestry is a local matter.'

"The outstanding feature in the report is adherence to the proven policy of federal cooperation. A pattern of federal, state and private action is proposed, which, within ten years, should see the 'forest problem' well on the way to a satisfactory nationwide solution.

"I see no tenable grounds for opposing the principle that the United States government determine the conditions on which, and the purposes for which, new authorizations of appropriations of federal funds are made. I believe, however, that Congress should not seek to put new strings on authorizations made fifteen years ago and I do not think it will do so."

W. B. GREELEY, Secretary-Manager, West Coast Lumbermen's Association

"It is an excellent thing to give the United States again, an overall picture of our forest situation; and a check-up on the progress that has been made. A similar survey, by a joint committee of Congress, laid the foundations for the Clarke-McNary Act in 1924.

"I am glad that Senator Bankhead's Committee again stresses thoroughgoing Federal cooperation in preventing forest fires as the foundation of national policy; and accepts the figure of $10,000,000 annually, worked out by Federal, State and private foresters, as the measure of adequate participation. If this one feature of the report can promptly be put into law and made the starting point for a renewed drive upon forest fires, with the states and private owners carrying their share, we will make another impressive forward stride in forestry—whatever else may be done or not done.

"Forest industry *is changing* from the old order of timber liquidation to a new order of timber cropping and sustained yield. The report understates the part that private industry itself is taking in this change. But the change is under way; and we should all get in step with it.

"Although probably classed as a 'rugged individualist,' I do not shrink from the idea of regulation of cutting practices in this process of change. It is probably inevitable, sooner or later, from the pressure of population and American living standards upon natural resources. But let us, in our forest evolution, retain the greatest possible play for free enterprise and private initiative. To the extent that regulation is unavoidable, let it be from the tree roots upward; relate it directly to the practical experience and woods sense of the people regulated; keep our State Departments of Forestry virile, aggressive, responsive—not just mouthpieces in a totalitarian regime.

"The State Legislature of Oregon has just enacted a law, imposing the ABC requirements of reforestation upon every commercial logger in the State. It was drafted and proposed by the lumber industry—out of practical experience. A similar bill failed in the Washington Legislature; but the Douglas fir operators have adopted a program of forestry, through private initiative and organized education, that will probably measure up to any legislative forest code. Surely our national policy should give maximum encouragement to the doing of these things directly by the people themselves, without an intervening hand from Washington.

"The Joint Committee's report is obscure in one respect. Does it propose that allotments under the entire appropriation for cooperative protection shall be contingent upon satisfactory State legislation governing forestry practices? Or does it contemplate that the present scale of cooperative fire allotments shall remain contingent only upon the protec-

tion measures of the states; and that increased allotments shall require satisfactory controls of cutting practices?

"It would be a serious mistake for the Government to upset the present basis of cooperative protection from forest fires, by withholding existing allotments until the states enact forest practice codes. That would be a step backward, disrupting organized forest protection over most of the United States. And it would defeat the objectives of the program. The Clarke-McNary appropriations for cooperative protection have grown more trees, at a lower cost, than any other expenditures of the Federal Government. They have established an essential basis for timber cropping, through creating and solidifying organized forest protection in thirty or more states. It would be poor statesmanship to uproot this progress and attempt to start all over again on a new theory of protection plus control of cutting practices.

"Let us at least keep our present minimum basis of forest protection undisturbed—whatever forms of additional cooperation may be offered to the States."

SAMUEL T. DANA, Dean, School of Forestry and Conservation, University of Michigan

"In the space allotted to me, I should like merely to emphasize the following statement which, because of its brevity and its inconspicuous position in the committee's report, is not likely to receive the attention it deserves:

" 'The individual owner, whether private or public, must compare the costs with the returns in one form or another from any plan of management. No one thing will do more to promote forest conservation than to get the information which shows how to make forestry pay in financial and in indirect terms.'

"To my mind one of the chief weaknesses of the Committee's recommendations is that they do not adequately develop this basic truth. There is the usual perfunctory endorsement of cooperation and research, but nowhere is it urged that these activities should be directed far more pointedly than at present to analyzing the possibilities of reducing costs and increasing returns, not in vague general terms but in the case of specific operations. We have as yet hardly scratched the surface in solving the many technical and economic problems involved in determining where forestry can pay its own way, and how.

"Public regulation may well have an important place in any comprehensive forestry program, but it will be less necessary and at the same time more effective to the extent that improved practices can definitely be shown to be to the advantage of the private owner. If they cannot be so shown, only public ownership or public subsidies will assure their adoption."

JOHN B. WOODS, Secretary-Manager, Oregon Forest Fire Association, Portland, Oregon

"In my judgment, the Congressional Joint Committee on Forestry has proposed a constructive legislative program, designed to strengthen private, state and federal forestry.

"To those who attended several of the regional hearings, the Committee's report may be a surprise. Its 25-page 'Findings of Fact' bear so little resemblance to the testimony given anywhere, except in Washington, D. C., that one wonders why the Committee adopted this text as its own. For example, more words were spoken by more people about the problems of forest protection than on any other topic. The report is notable for its failure even to mention this testimony. Such criticisms could be multiplied. Yet the sixteen recommendations certainly stem out of the testimony taken at these regional hearings. Apparently the gentlemen of the Committee insisted upon writing the excellent prescription themselves.

"Recommendation No. 1 is for a four-fold increase of cooperative fire protection contributions under the Clarke-McNary Act, which is as it should be. The quid pro quo implication appears sensible, although the five-point foundation of principles certainly needs truing up. Nos. 2, 3 and 4 follow naturally, to expand the cooperative program. No one can quarrel with the proposals for cooperative sustained yield units, forest credits, forest products and forest management research, or for completion of the forest survey. One may hope that the development of farm forest cooperatives will proceed cautiously. The proposal that the federal government lease and manage private woodlands looks no more attractive as Recommendation No. 8 than in any of its previous guises. The federal forest land acquisition proposal is moderate and, accompanied by Recommendation No. 12, will be widely supported. Increased provision for protection and management of national forests doubtless is needed; these proposals could be better evaluated if there had been some indication of their financial dimensions.

"Presumably Recommendation No. 16 will result in the Joint Committee being kept alive. Regardless of the need of such an investigation, it does appear desirable that this group of men, with their background of long service and specific study of this problem, be asked to stand by long enough to secure action by the Congress."

C. F. KORSTIAN, Dean of Forestry, Duke University

"The appearance of the report of the Joint Congressional Committee on Forestry is very timely in view of the extent to which the public regulation of privately owned forest land is now being discussed throughout the country. Few forestry-minded people will disagree with the opinion of the Committee that profitable forestry practices can be applied to much privately owned forest land in such manner as to keep this land reasonably productive and provide for adequate restocking. Most of the Committee's recommendations pertaining to extension and intensification of the provisions of the Clark-McNary Act, the Cooperative Farm Forestry Act, the McSweeney-McNary Forest Research Act, the State Forest Acquisition Act of 1935, to national forest protection and management, farm forest cooperatives, and forestry credit will meet with general approbation in the forestry profession.

"In a recent statement the Council of the Society of American Foresters has indicated that it favored an educational and constructive cooperative approach to public regulation of privately owned forest lands to the extent necessary in each local situation. Adequate provision must be made for approval of special cutting and other practices on individual tracts, and the owners of such tracts should have the opportunity to prepare such plans themselves, always provided the required practices prevent forest destruction and keep lands reasonably productive. The Council has further urged all foresters to scrutinize carefully and be prepared to criticize constructively all legislation proposed in order that the forestry profession may contribute most fully its knowledge and experience.

"Personally it would seem to me desirable for the Federal Government to indicate the general principles for cooperative control much as the Committee has recommended, but without Recommendations 8 and 16, and leave to the States the carrying out of the details of education and cooperation with private owners of forest lands. Recommendation 8, providing for the leasing of private forest lands to the Federal Government is favored by certain foresters and is considered neither necessary nor desirable by others. Recommendation 16, calling for an investigation of the pulp and paper industry, is no more germane to the subject than would be an investigation of many other wood using industries."

W. J. DAMTOFT, President, Southern Pulpwood Conservation Association

"The very comprehensiveness of the recommendations emphasizes that the report does not closely define the problem—whether it involves maximum production on every acre of forest land or merely sufficient production properly distributed to satisfy the nation's requirements, with due regard for market limitations and other economic factors, as well as for the less tangible benefits of watershed protection, recreation, etc.

"Unfortunately the Committee's 'Findings of Fact' have apparently reflected the prejudice of one member against the

pulp industry, thereby weakening confidence in the report on the part of those who are familiar with the effective efforts of that industry in promoting widespread application of sound forest management. These efforts are especially evident in the South where the industry welcomes appraisal by State and Federal foresters of its use of the forest and of the broadness of its program which advocates that the farmer convert into pulp wood those trees whose removal will promote the development of higher value products, and thereby provide the farmer with maximum financial returns from his woodlands.

"The pulp industry, whose contribution to sound forestry practice, in relation to other forest industries, is out of all proportion to its annual consumption of only seven to eight per cent of the total drain on the forests of the country, will undoubtedly enthusiastically assist in making effective those recommendations of the Committee which involve additional protection to the forest and cooperation between public agencies and the private timberland owner in effecting better cutting practices."

FRED C. PEDERSON, State Forester of Virginia

"While to many the recommendation that all federal cooperative fire funds be withheld until the states pass laws providing for reasonable forest practice rules may seem unnecessarily drastic, I definitely prefer this approach to the problem rather than the enactment of legislation which would authorize the federal government to regulate privately owned timberland in the country. However, I think that it would be a serious mistake to reduce the Clarke-McNary allotments which any state is receiving at the present time, even though that state failed to enact regulatory legislation which was satisfactory to the Secretary of Agriculture. Rather, if public control of logging practices and cutting methods is the most practicable solution to the problem of preventing needless and widespread exploitation of private forest lands in any state, it seems to me that the objective of the Joint Committee could probably be attained as quickly and effectively by denying that state any *increase* in federal-aid funds to be used for forestry purposes until satisfactory legislation, designed to conserve its forest resources and insure satisfactory regrowth, had been enacted.

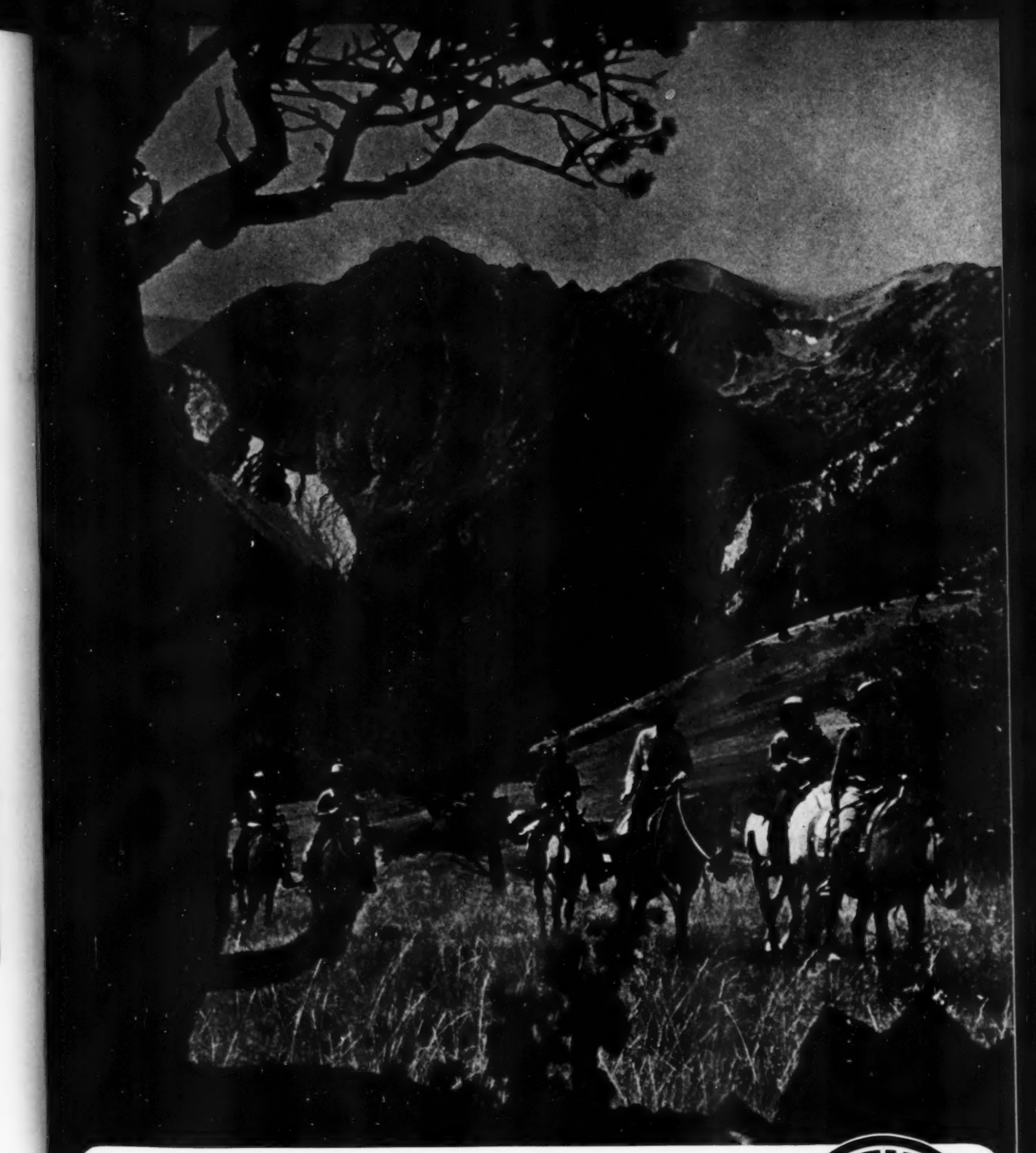
"As respects the committee's recommendations that the federal government be authorized to lease state, county, municipal, and private timberlands for administration and management, I have some reservation. I am doubtful of the practicability of this proposal, believing there are not many land owners in Virginia who would be willing to turn their forest properties over to the federal government for management under long-time agreement binding them to pay up to fifty per cent of the management costs incurred by the government. However, I favor enactment of the legislature and a small, initial appropriation to effectuate it in order that the program may be tried out in a small and experimental way to determine its feasibility and effectiveness under conditions different than those with which I am familiar."

CONTRAST

By FLORENCE BURRILL JACOBS

Has God created anything to match
For sheer bright joy, a cherry-tree in May?
(Idyll of scented bough and creamy spray
Reaching up exquisite, curved arms to catch
The silver globe which swells with every hour
When it shall drop, full-ripened, from the sky . . .
A faërie thing whose beauty passes by
So rapidly . . . a sheaf of dreams in flower.)

Unless it be this sturdy pine, which stands
In perfect symmetry and even-spaced,
(So that the moon behind it throws a traced
Pattern of black-and-gold on shadow lands),
And somehow fills one with a sense that here
Is staunchness to withstand the changing year.



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AROUND THE STATES

The first annual meeting of the newly created Forest Farmers' Association was held at Valdosta, Georgia, on April 8. It is hoped that this association will eventually represent owners of 60,000,000 acres of pine forest lands in the southern coastal plain. The new organization is distinct from the American Turpentine Farmers' Association Cooperative but includes many individuals composing both groups. The purpose of the organization is more to effectively protect and develop the South's forests. Legislation to protect the forests and better methods of marketing forest products will be fostered.

Leaders behind the new organization include Judge Harley Langdale, of Valdosta, Georgia, president of the American Turpentine Farmers' Association; William Ottmeir, general manager of the Superior Pine Products Company, Fargo, Georgia; H. M. Wilson, of Turpentine and Rosin Factors, Inc., Jacksonville, Florida; S. H. Hall, Forest Managers, Inc., Jacksonville, Florida, and A. V. Kennedy of Waycross, Georgia.

Washington's Fire Laws Strengthened

By amending the forest laws of 1937 the Legislature of the State of Washington has made more specific the forest fire responsibilities of forest operators. It authorizes the State Supervisor of Forestry to require common carrier railroad companies to operate speeder patrols at such times and places as he may designate. On the basis that any fire on forest land "burning uncontrolled and without proper precaution being taken to prevent its spread" is a "public nuisance by reason of its menace to life and property," the new law requires it be controlled or extinguished by the "landowner on whose property the fire exists." Similarly, fires which occur on a logging operation must be fought to the full limit of available employees, and shall not be left without fire fighting crews until written authority is given by an authorized deputy of the Supervisor of Forestry.

This striking painting was made by James Montgomery Flagg for the "American Weekly" and appeared on the cover of their issue for April 16, 1941. The painting was then presented to Secrtary Claude Wickard, of the Department of Agriculture. Posters from the painting are being made for national distribution by the United States Forest Service.

New Indiana Laws

Five of the ten laws on conservation recently enacted by the General Assembly of Indiana and approved by Governor Schricker are already in effect, it was pointed out on March 27 by Frank N. Wallace, acting commissioner of the Department of Conservation.

These include a series of amendments to the fish and game laws; the extension of the open season on red fox in the southern zone; the reforesting of areas where coal has been mined by the stripping process; and provision for cleaning and improving the Little Calumet River.

An amendment to fish and game laws provides that the designation "Game Warden" shall be changed to "Conservation Officer"; another eliminates the zoning of the state for trapping seasons and provides a statewide open season on raccoon, opossum, skunk, mink and muskrat from November 15 to January 31.

Five other laws affecting conservation in Indiana were enacted and approved. One, effective May 1, re-established the State Conservation Commission. Four others become effective when the Acts of the General Assembly are promulgated. These include extension of the closed season on prairie chickens, and making it unlawful to lower water levels in lakes of twenty acres or more.

Wisconsin's New Forests

Wisconsin in 1940 increased its forest lands by an aggregate of 20,000 acres by planting 38,106,300 new forest trees, mostly varieties of pine, bringing the total of non-federal public forests in the state to more than 2,079,000 acres.

Early spring inventory at Wisconsin's five state forest nurseries shows 67,000,000 young trees on hand, with nurseries now capable of supplying 50,000,000 new trees annually to provide an aggregate yearly planting of 25,000 acres.

Of the 1940 plant, 25,000,000 trees were allotted for county forest rehabilitation, 3,000,000 for state forest and wildwood parks, 3,500,000 for farms. Remainder of the trees were planted along highways for roadside beautification and as living snow fences, as farm shelterbelts, and were sold at modest prices for forest developments on private lands. No state trees may be used for purely ornamental plantings.

Small Sawmill Study

A three-year study of the small sawmill industry in the South has just been announced by the Charles Lathrop Pack Forestry Foundation, of Washington, D. C. The study is to be conducted by Mr. Albin George Jacobson, a well-known forester, recently in the employ of the Fordyce Lumber Company, in Arkansas, and will include an examination of the more important problems associated with the small sawmill industry, particularly as these problems bear on the effect of the sawmills on the forests themselves and on the economic welfare of the Southern States. It is the hope of the Foundation that before the study is completed, measures may be discovered leading to a better relationship between the small sawmill and the resource on which it exists.

Mr. Jacobson will make his headquarters for the next three years at Gilham, Arkansas. He is a graduate of the School of Forestry and Conservation of the University of Michigan, and has had extensive experience in the South. He has also held positions with the Michigan Department of Conservation, the Federal Forest Service, and his latest position was with the Fordyce Lumber Company, as assistant manager in charge of production.

The Charles Lathrop Pack Forestry Foundation, which supports this project, was founded by the late Charles Lathrop Pack for the purpose of making the forests of America of greater service to the nation. A forestry advisory board, made up of leading foresters and forest educators from the various forest regions of the country meets yearly to recommend to the Foundation studies which they feel should be undertaken, and which, for various reasons, neither the federal Forest Service nor the state forest services can undertake.

The two Southern members of the advisory board are Mr. E. O. Siecke, State Forester of Texas, and Captain I. F. Eldredge, Regional Survey Director of the Southern Forest Experiment Station, in New Orleans.

New Forestry Board in Montana

By recent action of the Montana State Legislature a new forestry board is to be created with the Governor as chairman. The other members are to be chosen as follows: "One to be named by the joint recommendation of the Blackfoot Forest Protective Association and the Northern Montana Forestry Association; one upon the recommendation of the Montana Stock Growers' Association; one who shall represent farm woodland owners, owning not less than forty acres and not more than 400 acres, to be appointed by the governor from individual recommendations to be submitted by the State Grange, the Montana Farm Bureau and the Montana Farmers' Union; one upon recommendation of the Montana Lumber Manufacturers' Association; one who shall be a member of the faculty of the Montana School of Forestry upon the recommendation of the president of the University; and one on the recommendation of the Regional Forester of the federal Forest Service. The governor shall name an ex-officio chairman to serve as active chairman for such meetings as he is personally unable to attend."

Existing legislation is also amended so as to define forest land as under fire protection if the owner maintains a responsible resident on each legal subdivision of 160 acres, or less.

"Keep Washington Green" Program for 1941

The Keep Washington Green Committee, organized in the State of Washington in 1940 to fight the forest fire menace, has announced that the Junior Forest Council of Washington State will join in the campaign this summer to "Keep Washington Green." The Council will serve as a coordinating and liaison agency for popular forestry education.

According to State Forester T. S. Goodyear, the most effective idea developed in the 1940 experimental program was that of the "American Legion Fire Marshal," put into action by Stewart H. Holbrook, director of the "Keep Washington Green" campaign. When the 1941 campaign is formally launched on April 15, with Mr. Holbrook again in charge, it will be built around the forest marshals of the posts of the Washington Department of the American Legion.

Acting with the Legion marshals will be the Junior Forest Council and an organization of youth patterned somewhat along the lines of the Junior Forest Wardens in British Columbia, developed by the Canadian Forestry Association ten years ago. In every British Columbia forest community groups of selected boys serve throughout the fire season carrying on local work in primary forestry under the guidance of official foresters and wardens.

In a recent statement State Forester Goodyear, who is also chairman of the Junior Forest Council, said: "There is vital need for a medium through which information developed by the various forestry agencies of the state may be conveyed to the public, in a popular, understandable form. A channel between forestry authorities and our young people is particularly needed. Here is where the Junior Forest Council will serve.

"The Council favors local programs, locally managed, based upon local needs, organizations and facilities, rather than a strong centralized program designed to cover the entire region. The function of the Junior Forest Council is to serve, under the direction of the State Forester, as a channel to convey informational and inspirational material on the facts and problems of the forest to local organizations; and to serve generally as a coordinating and liaison agency for popular forestry education."

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FEDERAL NEWS AND REVIEWS

To safeguard the nation's wildlife resources, President Roosevelt has requested that a liaison officer from the Fish and Wildlife Service keep informed of the activities of defense agencies which would seem damaging to fish or wildlife, Secretary of the Interior Harold L. Ickes announced on March 19. In a letter to the War and Navy Departments and the Office of Production Management, Secretary Ickes designated Albert M. Day, of the Fish and Wildlife Service. Mr. Day is chief of the Division of Federal Aid in Wildlife Restoration.

The President indicated that the liaison officer should keep informed of plans or operations of naval and military services, together with the operation of plants, factories, and other establishments which would seem damaging to fish or wildlife. Where such conditions are found, the liaison officer will report to Secretary Ickes, who will take up the matter with the agency concerned.

CCC Camps Reduced

James J. McEntee, director of the Civilian Conservation Corps, has announced that a gradual reduction in the enrolled strength of the Corps and the number of camps in operation will be initiated on April 1. "The reductions have been ordered," Mr. McEntee said, "to bring the strength of the Corps into line with the pending CCC appropriation bill which provides for the operation of 1,365 camps with a maximum enrollment of 273,000, exclusive of Indians and territorials, during the 1942 fiscal year, rather than 1,500 camps with an enrollment of 300,000 men as at present."

The operating program for the final quarter of the current fiscal year which begins on April 1 provides for the operation of 1,473 camps as compared with 1,500 at present. The program also provides for a maximum enrollment of juniors and war veterans of 275,570 as compared with an authorized enrollment at present of 300,000, exclusive of 11,000 Indians and territorials. Additional camps will be closed in May and June as enrollees complete their training courses and obtain jobs in private industry.

Director McEntee stated that substantial improvement in employment prospects for young men in the CCC age groups had made it possible to effect a gradual reduction in CCC strength rather than make the whole cut at the end of the fiscal year.

Fish for National Forest Streams

The fish planting program of the Federal Forest Service placed 288,000,000 fish in the streams and lakes of thirty-four states and Alaska during 1939, it has been reported.

Forest Service officers working in cooperation with states, other federal agencies, sportsmen's organizations and local residents, to restock streams in national forests for the benefit of fishermen, carried the fish in trucks, airplanes, pack trains and even on their backs.

The important trend in fish planting in the past two years has been toward the use of legal size fish, it was pointed out. Instead of using their facilities to turn out an annual crop of small fish which require two years in the stream to reach legal size, the hatcheries carry the fingerlings another year on full feed and plant them when large enough to be legally caught. When planted in the lakes and streams, the larger fish become immediately available to the sportsmen and in a measure tend to eliminate the throwing back of undersized fish in some of the localities.

As a recreation, data gathered by the Forest Service indicates fishing is second only to sightseeing among the varied interests of the many millions who visit the national forests annually. This extensive use has made a demand for more fish, improved streams and scientific management of water as a recreational resource. With the aid of the CCC, low log dams, stream deflectors and other devices have been placed in rushing streams to slow down the water and provide better conditions for fish. Many varieties of water plants and forms of water life have been transported over long distances to improve the available food resources in fishing streams and lakes. New fish hatcheries, rearing ponds and holding ponds have been constructed.

Erosion and Reservoirs

Soil erosion has cut the useful life of over twenty per cent of the water-supply reservoirs of the United States to less than fifty years, H. H. Bennett, chief of the Soil Conservation Service, said on March 23. Another twenty-five per cent will be lost in fifty to one hundred years. Only fifty-four per cent of water-supply reservoirs in the country will provide sufficient storage to meet present requirements, 100 years hence.

Over $463,000,000 is invested in water-supply reservoirs in the United States, and erosion is a danger in virtually all states.

The Service has compiled information—never before available—on the 12,000 or more reservoirs and dams throughout the country. The file covers area, use, capacity, and ownership of reservoirs; height, length, type, date of completion and cost of dams; and the area within watersheds.

This sedimentation and reservoir file, Mr. Bennett said, will be especially useful in upstream flood control investigations. The file also has a national defense value, SCS officials pointed out, since it is available to proper officials for the planning of camps, factories and

other projects, as well as in studying means of protection against sabotage.

The primary purpose of the reservoir surveys, however, has been to determine the effect of soil erosion on storage capacity. Erosion control practices advocated by the Service already have proved effective in reducing sedimentation. A survey of the High Point, North Carolina, city reservoir, for example, showed that erosion control practices had reduced the rate of siltation by twenty-five per cent in less than ten years.

Yosemite Training School

Announcement of the seventeenth annual session of the Yosemite School of Natural History to be held from June 23 to August 9, 1941, in Yosemite National Park, California, has just been made by Lawrence C. Merriam, park superintendent. This is a government training school for those seeking employment in the naturalist field of the National Park Service.

Enrollment is limited, and this year sixteen men and four women who have college degrees in some branch of natural science will be selected for the school. No tuition is charged, but a registration fee of $7.50 is required. Field work predominates, a week being spent in the Swamp Lake Research Reserve and two weeks on a back country pack trip for the study of the flora, fauna and geology of the High Sierra.

Those interested should write to the Superintendent, Yosemite National Park, California, for application blank and prospectus.

Lumber Consumption Gains

A biennial report on lumber distribution and consumption in the United States—this one for 1938—has been issued by the Federal Forest Service. It shows that the lumber cut of the United States in 1938 was in excess of 21,000,000,000 feet—a decrease from the preceding year. Exports and imports of lumber also showed a decrease in 1938.

Per capita utilization of lumber in the United States, however, increased from ninety-four board feet in 1932—the low point of the depression—to 164 board feet in 1938, according to R. V. Reynolds and A. H. Pierson of the Division of Forest Economics, co-authors of the report. The top figure, however, is less than one-third of the peak per capita consumption of 523 board feet, reached in 1906.

In 1938, twenty-four states showed per capita consumption below the national average. All are east of the Great Plains, and nineteen consumed more lumber than they produced. The states which ship in the largest quantities of lumber—including imports—are California, New York, Illinois, Pennsylvania, Ohio and Michigan, each receiving more than 500,000,000 feet.

During 1938 per capita lumber consumption varied from a low of fifty-seven board feet in the District of Columbia to a high of 974 board feet in Oregon, a region where the timber supply is ample and cheap as compared with other construction materials. In general, the report says, the low relative per capita consumption in many eastern states is closely linked with deficient or depleted forests.

Peak Named for Roger Toll

A previously unnamed peak, located midway between Paiute and Pawnee Peaks, about seven miles west of Ward, Colorado, on the boundary between the Arapaho and Roosevelt National Forests, has been named Mount Toll, in honor of the late Roger W. Toll. Mount Toll is a sharp distinctive horn on the Continental Divide, about 12,400 feet in elevation, and appears prominently on the skyline. This action was recommended to the Board on Geographical Names by the Forest Service, with the approval of the Colorado Mountain Club and the National Park Service.

Mr. Toll was one of the early leaders in organizing and developing the Colorado Mountain Club, and his contributions to mountaineering and conservation in Colorado and elsewhere were outstanding. He was long connected with the National Park Service in various capacities, and from 1921 to 1929 served as Superintendent of the Rocky Mountain National Park. The peak now named Mount Toll is located only six miles from the southern boundary of this Park.

At the time of his death in an automobile accident at Deming, New Mexico, in 1936, Mr. Toll was serving on a commission to study the possibilities of international parks and wildlife refuges along the Mexico-United States boundary.

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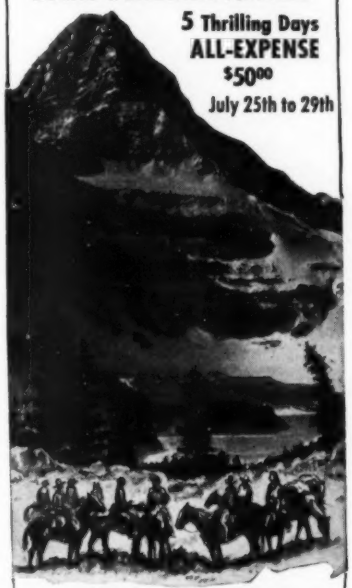

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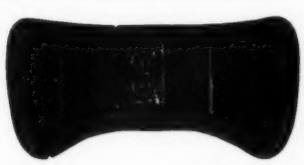

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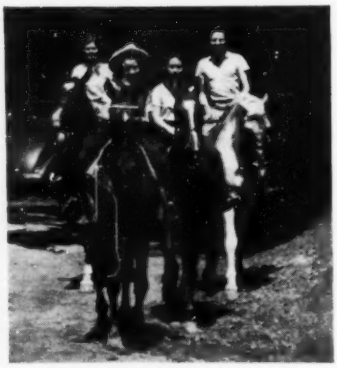

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CONSERVATION CALENDAR

Important Bills in Congress, with Action March 18 to April 4, 1941

BILLS ENACTED

H. R. 2788—WOODRUM—Making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions, and offices for the fiscal year ending June 30, 1942. Passed House January 31. Passed Senate amended March 10. Signed by the President April 5.

H. R. 3735—CANNON—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1942. Passed House March 6. Passed Senate amended April 3. In conference.

H. R. 3836—WOODRUM—First Deficiency Appropriation for the fiscal year ending June 30, 1941. Passed House March 7. Passed Senate amended March 20. Signed by the President, April 1. Public Law No. 25.

CONSERVATION

S. 1180—SHIPSTEAD—To amend the Shipstead-Nolan Act of July 10, 1930, promoting the better protection and highest use of lands of the United States and adjacent lands and waters in northern Minnesota for the production of forest products, etc. Introduced March 20. Referred to the Committee on Agriculture and Forestry.

H. R. 4128—RANKIN, Mississippi—To provide for the creation of conservation authorities, and for other purposes. Introduced March 21. Referred to the Committee on Rivers and Harbors.

FORESTRY

H. R. 4137—FULMER—To extend the benefits of the act of August 29, 1935, relating to federal assistance in the acquisition and development of state forests, to counties, municipalities, and other political subdivisions. Introduced March 21. Referred to the Committee on Agriculture.

H. R. 4308—DOXEY—To promote sustained yield forest management in order thereby (a) to stabilize communities, forest industries, employment, and taxable forest wealth; (b) to provide for a continuous and ample supply of forest products; and (c) to secure the benefits of forests in maintenance of water supply and stream flow, prevention of soil erosion, etc. Introduced April 3. Referred to the Committee on Agriculture.

GOVERNMENTAL FUNCTIONS

S. 1136—MCNARY (H. R. 3458—PIERCE)—To provide for a Forest Credit Commissioner and a Forest Credit Bank, within the Farm Credit Administration, to extend credit for furthering the conservation and operation of forest lands, etc. Introduced March 17. Referred to the Committee on Agriculture and Forestry.

LANDS

H. R. 1037—PETERSON, Georgia—To establish a national land policy, and to provide homesteads for actual farm families. Introduced January 3. Public hearing held by the Committee on the Public Lands, April 3.

NATIONAL PARKS

H. R. 69—ELLIOTT, California—To authorize the adjustment of land-ownership lines within the General Grant grove section of the Kings Canyon National Park, California, in order to protect equities established by possession arising in conformity with a certain survey. Reported with amendment (Report No. 375) by the House Committee on the Public Lands April 3.

H. R. 4136—WEAVER—For the relief of the counties of Haywood and Swain in the State of North Carolina by reason of their loss in taxable valuation by the establishment of the Great Smoky Mountains National Park. Introduced March 21. Referred to the Committee on the Public Lands.

PUBLIC DOMAIN

S. 1201—MCNARY—To provide for a uniform method of payments to the several states on account of certain lands of the United States. Introduced March 24. Referred to the Committee on Public Lands and Surveys.

S. 1297—HATCH—To revise the method of determining the payments to be made by the United States to the several states with respect to conservation lands administered by the Department of Agriculture. Introduced April 3. Referred to the Committee on Agriculture and Forestry.

WATER AND STREAM CONTROL

H. R. 4106—WEISS (S. 1121—GILLETTE)—To create a Division of Water Pollution Control in the United States Public Health Service, etc. Introduced March 20. Referred to the Committee on Rivers and Harbors.

CONSERVATION IN CONGRESS

On April 3, the Senate amended and passed the Agricultural Appropriation bill for the fiscal year beginning July 1, 1941. The Forest Service appropriation of $19,154,455 was $1,132,000 greater than the amount passed by the House on March 6. Funds for the protection and management of national forests were increased $100,000 by the Senate to a total of $11,086,000. The Senate restored the Bureau of the Budget estimate for cooperative forest fire prevention to the full authorization of $2,500,000. The item for national forest land acquisition was increased $500,000 to a total of $2,000,000.

Funds for the control of Dutch elm disease were increased $50,000, to a total of $350,000. The amount for gypsy and browntail moth control remains at $375,000. The House reduction of funds for white pine blister rust control was restored by the Senate to the original Budget estimate of $1,409,000, of which $500,000 was allocated to the Bureau of Entomology and Plant Quarantine; $694,000 to the Forest Service and $215,000 to the Department of the Interior. The forest pathology item was increased $10,000, to a total of $255,000.

The item for forest products research was increased to a total of $1,000,000 by the Senate. Funds for forest management research were increased by $50,000 to be used for selective cutting investigations in the Douglas fir region. The item for range investigations received an increase of $10,000. Funds for the construction and maintenance of forest roads and trails were increased $4,000,000, to a total of $13,000,000.

At the insistence of Senator Norris of Nebraska, cooperative farm forestry funds were increased $300,000, to a total of $700,000. The entire $300,000 increase is earmarked for the shelterbelt. Naval stores investigations received a $23,000 increase in the Senate.

The conference between House and Senate conferees was delayed by the Easter recess of the House from April 3 to 14.

On April 1, President Roosevelt signed the First Deficiency Appropriation Act with $3,480,000 for fighting and preventing forest fires on national forests for the fiscal year ending June 30, 1941.

Now that the report of the Joint Congressional Committee on Forestry has been transmitted to Congress, the way is open for congressional action on important forestry and conservation legislation. The unanimous report of the Joint Committee was not accompanied by formal legislation, but several members of the committee have introduced bills which would carry out some of the committee's recommendations. Among these are: the new cooperative sustained yield unit bills, S. 1093 and H. R. 4308, introduced by Senator McNary and Representative Doxey, which authorize the Secretary of Agriculture to enter into cooperative agreements with private forest land owners providing for (a) cutting rates and management plans for the entire unit under a cooperative agreement; and (b) sale of national forest timber at not less than its appraised value without competitive bidding. These new bills would accomplish substantially the same results as the old McNary-Doxey bills, S. 789 and H. R. 572, and the White bill H. R. 2527, but would give the Secretary of Agriculture more administrative and enforcement authority.

Representative Pierce and Senator McNary of Oregon introduced companion bills H. R. 3458 and S. 1136 authorizing the establishment of a forest credit division in the Farm Credit Administration. A forest credit bank would be incorporated to issue bonds and make loans to forest owners and operators for sustained-yield management of their properties.

Another bill, H. R. 628, introduced by Representative Randolph of West Virginia, and a similar one, S. 601, by Senator McNary, would remove the present limit on authorizations with regard to the forest survey.

Representative Fulmer of South Carolina introduced H. R. 969, providing for cooperative agreements and leases between forest land owners and the Secretary of Agriculture.

Of particular interest is Representative Fulmer's bill, H. R. 4137, providing for an authorization of $10,000,000 to put into effect the State Forest Acquisition Act of August 29, 1935. The appropriation would be expended at the rate of $2,500,000 a year.

Mr. Fulmer's Pulpwood Investigation —H. J. Resolution 15—was recommended by the Joint Committee on Forestry. Early consideration by the House is expected.

Authority to purchase privately owned lands in the International Boundary Wilderness Area, now administered under the Shipstead-Nolan Act, is continued in H. R. 4169, introduced on March 25 by Representative Harrington of Iowa. The lands which are proposed to be acquired would be added to the Superior National Forest in Minnesota. The bill authorizes the expenditure of $600,000 at the rate of $100,000 a year for six years.

The new national forest grazing bill, S. 1030, introduced by Senator Johnson of Colorado, is similar to his bill of the Seventy-Sixth Congress. This bill would provide legal authority for the establishment of local boards organized by stockmen to advise the Secretary of Agriculture on the administration of national forest grazing areas. The new Johnson bill requires formal publication of the Secretary's rules and regulations in each grazing area.

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YOUR SHADE TREES: By DEVEREUX BUTCHER

WATCH YOUR ELMS!

IF EVERY owner of an elm constitutes himself a *vigilante,* the dread Dutch elm disease may certainly be held in check in the United States, even though it may not be possible to rout this virulent tree enemy completely. Putting first things first is the order of the day and the first thing—in the case of control of the Dutch elm disease — for any and every owner within the more or less restricted area in which it is now found, is to watch for and report at once to the proper officials any definite symptoms of the disease which he notices. This applies particularly to those who live within or near the disease areas shown on the map on the next page. Owners of elm trees in other sections of the country should not be too alarmed when their trees become sick, for upon examination they may be found to be suffering from some other enemy of the elm, which can be controlled by scientific treatment.

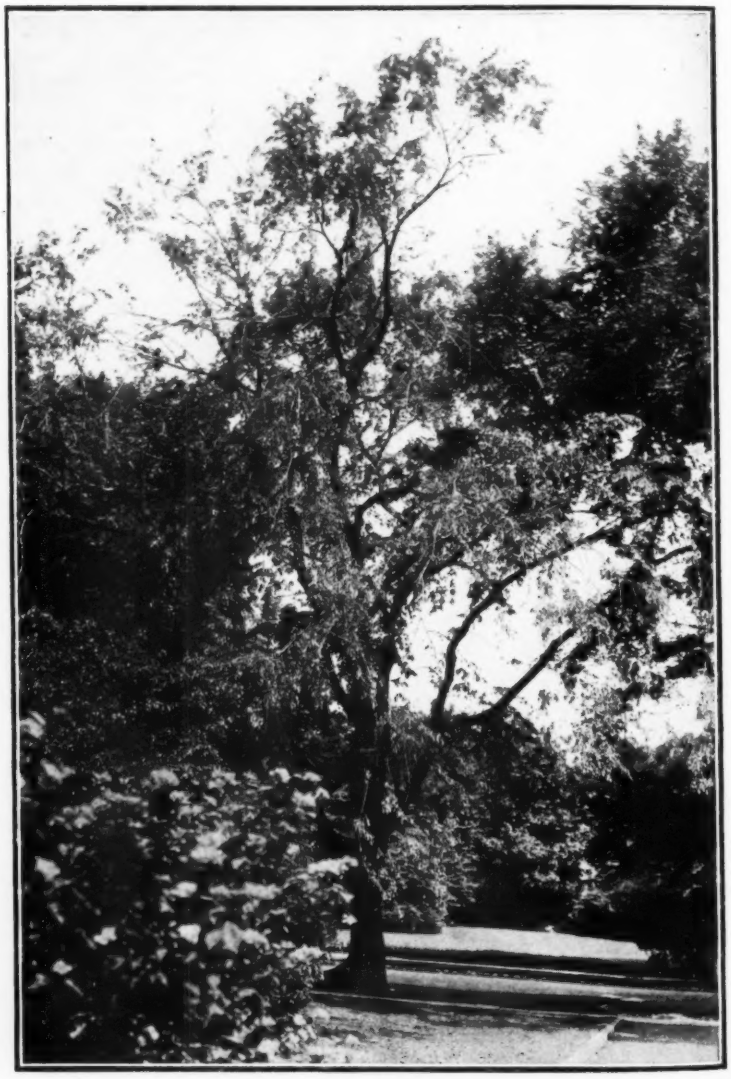
The American elm is the pride of Americans—tree lovers *et al*—and, for the benefit of those who may not be familiar with the facts, this is a brief history of the origin of the Dutch elm disease—what it is, how it acts, and how it may be controlled.

In the year 1919, in southwest Holland, elms were found dying of the disease. In the same year elms in nearby Belgium and France were also found to be infected with the same disease. The blight has since spread through nearly all the countries of Europe, including the British Isles. How the disease originally came is not known, but it is possible it was imported through an unknown means from Asia. In Europe and Great Britain there are several species of elms. Some of these species are very susceptible to the disease, while others are less so. Up to the present time a vast amount of damage has been done there.

The disease came to the United States during the years 1926 to 1930 through the importation of infected burl elm veneer logs from Europe. It was not until 1933 that scientists finally found out how it was making its entry. Of course, from that time on, all importation of elm logs has been stopped.

Then, strangely enough, the disease was again found entering our country in 1934. The story of this discovery is an interesting one, but too long to relate here. Briefly, dish crates from England made of infected elm wood were being shipped in by way of New York. This, too, has been stopped.

And now, what *is* the Dutch elm disease? It is a minute fungus growth which lives on the newly formed or young wood just beneath the bark of the elm. The spores, or microscopic reproductive



Wilting, discolored foliage on one or more branches of your elms may mean infection with the Dutch elm disease. In order to be sure, report them immediately, with samples, to the Bureau of Plant Quarantine, Glenwood and Henry Streets, Bloomfield, New Jersey

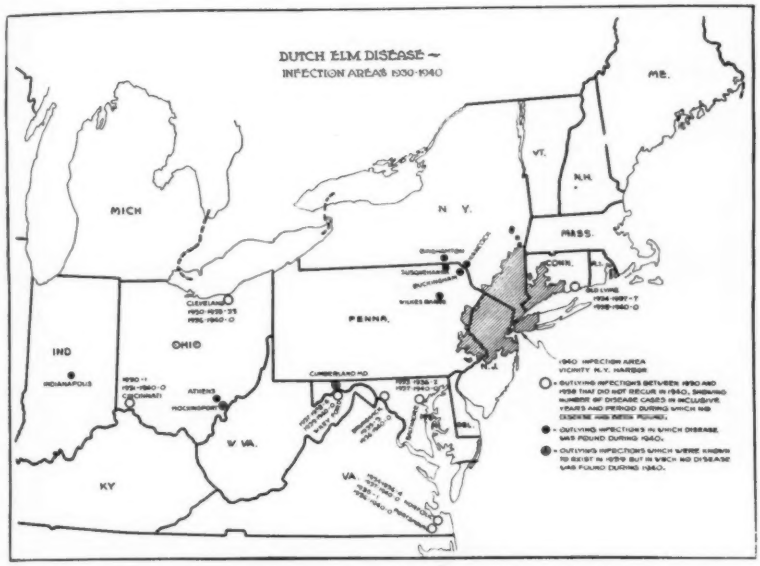
bodies of this fungus, are not able to rely upon wind to spread them as do the spores of many other forms of fungi with which we are more familiar, such as mushrooms. Living within the sap tubes of the wood, this fungus makes use of the minute wood-boring elm beetle for dissemination. The fungus does not injure the beetle. Its spores simply adhere to the beetle's body just as pollen adheres to the body of a bee, and is thus transported. One other means of the spread of infection is through the grafted roots of elms growing close together. The destructive power of the fungus is brought about either by toxic action or a plugging action of the sap tubes.

There are two species of beetle. There are two broods of beetles of both species each year, and both species are capable of transporting the disease. These broods are in flight from May to September, during which period they seek the twig crotches of healthy elms upon which to feed. Then, when egg-laying time comes, the females seek the trunks and large limbs of dead or dying elms. Boring through the bark, they reach the outer layer of wood,—the tender cambium tissue,—and here drill a vertical tunnel about two inches in length. In this tunnel eighty to one hundred and forty eggs are laid. When the larvae, or grubs, hatch they feed upon the surrounding cambium by forming channels that radiate from the original one. After the larvae mature and the young beetles are ready to come out into the world, they drill through the bark. While the beetles are boring, a reddish sawdust appears on the bark. Emerging from an infected tree, this brood in turn seeks the twigs of a healthy elm and proceeds to plant the fungus while feeding at the twig crotches.

To help in the control of Dutch elm disease we must know how to recognize an infected tree. The first signs of infection usually occur in the topmost twigs and branches, which show a wilting, yellowing or dying of the foliage. It is possible to save an elm from dying if the infected part is small and is pruned out. This has actually been done successfully. It is more usual, however, that unless discovered as soon as apparent, and unless certain favorable conditions exist, the tree will soon become entirely infected and die. Then it must be destroyed.

This means of detection is complicated by the fact that there are other elm diseases which produce a similar outward appearance. Such a sign must therefore lead to sampling. In order to obtain samples it may be necessary to employ men trained in the care of trees to secure the high twigs. The samples should be twigs of about the size of a lead pencil, and a half dozen or more in number. If diseased, the wood will show a brown discoloration in the outer layers. But again this is not conclusive evidence that the tree is infected by the Dutch elm disease, because this, too, may be the result of one of the other elm diseases. For a final diagnosis, the twigs should be tightly wrapped in paper and mailed either to the Bureau of Entomology and Plant Quarantine, Glenwood and Henry Streets, Bloomfield, New Jersey, or to your state experiment station, or state bureau of entomology.

If the sample, upon laboratory culturing, shows the Dutch elm disease fungus, the plant pest control laws of the state may be invoked to cause the tree to be destroyed. Not only must the tree be cut down, but the wood and brush must be burned. To prevent infected sprouts from



Shaded area above shows the main region of Dutch elm disease infection. At a number of outlying points a few infected elms have been found. These points are shown by circles, indicating present status of these infections as explained in map legend

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growing from the stump, it is advisable to pull back the bark from the stump and coat the wood with a layer of powdered copper sulphate, then fold the bark back again.

Basically, the local protection from the disease depends upon how free an area is kept of dead elm wood. In ornamental trees — those which are most valuable — located in towns and cities and residential areas, dead elm wood is eventually removed and destroyed, but to increase protection it is necessary only to shorten the time that such dead wood is allowed to remain on the trees. In the summer, all dead or dying wood should be destroyed within a month, up to and through September; while the winter's accumulation of dead wood should be destroyed before May. By this means the emergence of bark beetles from such material can be so reduced as to keep disease infections at a low level. *Remember this: Though the temptation to store elm logs for winter fuel may be great, by doing this you are subjecting your living elms to almost certain infection. Destroy all dead or dying elm wood at once.*

A healthy tree, like a healthy animal, is better able to resist disease. It may be a help to water any particularly valuable elm during a prolonged dry period. It may also help to feed such a tree once a year. This can be done by making small holes throughout the area of ground that is beneath the spread of branches. A nitrogenous fertilizer should be used, and a handful placed in each hole.

As an ornamental and shade tree, the stately American elm has no equal. Planted in parks and on private property or along avenues and roadways, since earliest times in this country, the American elm has been a favorite tree and now is well worth fighting for, that it may be prevented from going the way of the American chestnut.

From recent progress, and that which may be expected from further research, it is possible to say that the Dutch elm disease is controllable, and that our valuable elms, if properly cared for, need not be allowed to die.

Watch your elms from now until the leaves fall, and if necessary seek the expert advice and aid that are available through your state or federal agencies.

PIONEER FORESTER PASSES ON

CARY L. HILL, senior forester of the California Forest and Range Experiment Station, who retired on January 1 after thirty-six years' service to his profession, passed away February 26.

Cary L. Hill

Born at Howell, Michigan, in 1875, Mr. Hill had a varied experience before settling down to his life-calling. After graduation from the University of Michigan in 1901 with a classical A.B. degree, he taught English and mathematics for a year. Going west on a summer excursion he stayed to explore the Cascade Mountains in Washington with the Geological Survey. It was while in the west that he became interested in the forests and in 1903 returned to his alma mater to attend the forestry school which was just being established that fall. There he was awarded the degree of M. S. F. in 1905.

Since July 1, 1905, Mr. Hill had been with the Forest Service continuously with the exception of three years, 1909-12, when he was assistant professor of forestry at his alma mater. He served as chief of the Forest Products office in Region 2, as a forest examiner, as chief assistant in timber management, and was in charge of law enforcement and forest products activities. Since 1927, he had been with the California Forest and Range Experiment Station, where his responsibilities included direction of the products and economics research, and more recently special services in forest land utilization.

Mr. Hill was the author of numerous publications ranging from semi-popular articles in trade journals to technical bulletins covering such topics as wood paving in the United States, law enforcement on the national forests, heptane from California pines, and air seasoning of western softwood lumber. His membership in learned societies included the American Association for the Advancement of Science. Since 1907 he had been a senior member of the Society of American Foresters, and served as chairman of the California section, 1927-29.

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Two Thousand Miles With a Pack Train

(*Continued from page* 235)

down, and their 'magnificent retinue' consists of some sore-backed horses and plenty of flies and mosquitos, while their 'luxurious bill of fare' is composed principally of 'sowbelly' and potatoes. They move camp nearly every day."

This editor hit it about right, particularly as to the flies and mosquitos. They were so troublesome at times that it was necessary to use a burlap blanket on both pack and saddle horses during daylight hours. Fortunately the flies and mosquitos went to bed with the sun.

In my old diaries I have an itemized record of distance traveled, work performed, route of travel, and expenses incurred. These records show that the "grub" bill for the trip amounted to less than $10 a month per man. All cooking was done by members of the party, and practically no horse feed was bought. The main item of expense was for horse hire and horse-shoeing. The longest day's ride was on September 17—fifty-two miles. On four other days over thirty miles was covered by the party.

While on the trip I met Special Superintendent A. A. Anderson, Forest Supervisors Miller, Pierce and Russell, and Rangers J. W. Nelson, Thomas Nelson, Gebhart, Woods, Hunter, Boyd, Goodman, Wolff, Ross, LaPlant, Yeaman, Morris, Hill, Glover, Caldwell, Brown, Clark, Green, McLaughlin and Huff. Anderson, Gebhart and Goodman were on much of the trip. J. W. Nelson is today in charge of the Forest Service Experimental Range near Fresno, California, and Woods is regional forester at Ogden, Utah. LaPlant followed me to California and served for years as forest ranger on the Plumas, Lassen and Angeles National Forests.

This long ride was through some of the most beautiful country in Idaho, Montana and Wyoming. There was no lake in Jackson Hole at that time and no bridge across Snake River. The fording of this river, as well as other streams, was not a simple matter. We happened to hit them when the snow was going off the high mountains and they were deep, cold and swift.

Very little of the 2,087 miles covered was over constructed roads or trails, most of the route being "cross country" in an effort to follow the boundary as closely as possible. As a consequence, much of the going was rough—steep mountain sides, fallen timber and rocks being more common than roads or trails. We did find game trails in many localities and used them as much as possible.

Some of the mountain region covered during this trip is today embraced in wilderness areas. In 1903, much of it was wilderness. Settlers were few and scattered, and means of transportation slow. On the entire trip not a "horseless carriage" was seen, and the only stages met were those following the main tourist routes in Yellowstone National Park.

I remember camping one night in September near a small stock ranch, the last outpost of civilization before entering the Wind River Mountains. Calling at the ranch house about dusk to see if eggs and vegetables could be purchased, I was surprised to find that the only occupant of the ranch was a young girl. Her father and mother had left in a wagon two days before for the nearest store, sixty miles away. The daughter had been left to hold down the ranch and feed the stock while they went after the winter supply of provisions.

In later life it has been one of my greatest pleasures to look back to the days when every forest officer had to know how to "fork a broncho," throw the diamond hitch, cook in a dutch oven over a campfire, spread out his "tarp" and blankets on a rock pile, and go to sleep with the sound of the bells on his pack and saddle horses ringing in his ears.

The automobile is a mighty fine means of transportation. I have traveled countless miles in one on forest work. But I have always been glad of the opportunity to see the western country, from the Oklahoma Hills to the Sierra Madre and from the Rio Grande to the Northern Rockies, either from the "hurricane deck" of a cayuse, or via "shanks mare." Knowing how the mountain country has been opened up by highways and, in recent years, by CCC constructed roads, it is certain that the forest officer of the future will never have the opportunity to take such a pack trip as the one that was made in 1903. From all that I have been able to learn, this was the longest pack trip ever made by any forest officer since the first forest reserves were created.

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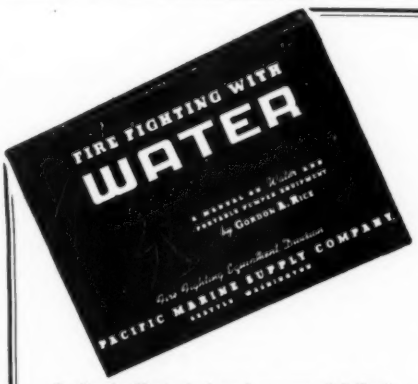
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AMERICAN WILDLIFE Illustrated, by the Writers' Program of the Works Project Administration in the City of New York. Published by Wise and Company, New York. 749 pages. Price $3.50.

Did you know that the Rocky Mountain goat of western North America is not a goat but an antelope? That a peccary, the wild swine of Central America, Mexico, and southwestern United States, gives off a musky odor when angered, and that the combined anger of a herd makes the scent of skunk seem mild by comparison? That a horned toad when frightened squirts blood from its eyes? *American Wildlife Illustrated,* tells you about such things.

And what of the strange tales we often hear concerning many forms of wildlife? Are they true or false? For instance, is it true that a porcupine shoots its quills at an enemy? Is it true that a glass snake if broken in pieces can join itself together again? *American Wildlife Illustrated,* answers these questions. It is almost a wildlife encyclopedia, illustrated with 327 photographs and six color plates. The text, from which all scientific terms are omitted, is simply written. Here, indeed, is a volume that deserves a place in every home, school, and public library in North America.

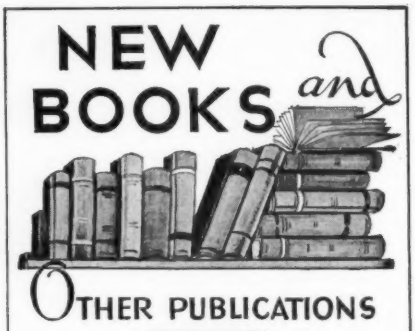
MATCHING YOUTH AND JOBS, by Howard M. Bell. Published by the American Youth Commission of the American Council on Education, Washington, D. C. 277 pages. Ills. Price $2.00.

This study of occupational adjustment will appeal to those interested in the social welfare of young men and women entering the commercial fields and will be of particular significance to those who are responsible for the proper training, guidance, and eventual placement of young people through agencies present in most communities.

"Matching Youth and Jobs" represents the findings of the American Youth Commission and the United States Employment Service in their joint investigation into the needs of our youth at this important time of their lives.

CROSBY-FISKE-FORSTER HANDBOOK OF FIRE PROTECTION, ninth edition. Edited by Robert S. Moulton. Published by The National Fire Protection Association, Boston. Illustrated. 1,308 pages. Price $4.50.

This book covers the subject of the cause of fire and fire protection as related to dwellings and other buildings, mines and forests. In fifty-nine chapters it discusses such topics as loss of life by fire, laws and regulations, common hazards, flammable liquids, electricity, dust explosions, spontaneous heating and ignition, heavy timber construction, fire retardant treatments, public fire protection, types of automatic sprinklers, private fire organization, transportation fire safety, and many others.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

SIFTINGS, by Jens Jensen. Published by Ralph Fletcher Seymour, Chicago, Illinois. 110 pages. Price $2.50.

Jens Jensen is a landscape architect. After reading his book, one feels that perhaps his title would become more fitting if the word "landscape" were changed to landscapist and the word "architect" omitted. It is Mr. Jensen's philosophy toward his work which sets him apart.

With the belief that landscaping is just being born, and that its birthright is the soul of the out-of-doors, Mr. Jensen expresses his leading thought when he says "the art of living is the accomplishment and the fulfillment of our task during our sojourn on this earth"; and that "whatever human hands may render in real accomplishments toward joy and happiness the main source of inspiration will always be the untouched work of the great Master." The superficial and the pretentious find no favor with the author. The outward expression of a people, he says, cannot be found in the pompous gardens of large estates, but in the simple gardens of the common folk, for here is found a true art that has grown out of the soil and out of the heart of the people.

Of city dwellers, the author says that they are swept into rules and regulations, and that life for them becomes one of artificiality. "No mind," he says, "can be free in a concept of limitations." In the virgin forest you can read the story of creation. Here there is no repetition, but a multitude of ideas for the fertile mind to work with. The mechanical pattern in landscaping is all too often followed, and in this respect we find these stimulating words: "Straight lines spell autocracy, of which most European gardens are an expression, and their course points to intellectual decay, which soon develops a prison from which the mind cannot escape. The free thought that produces the free curve can never be strangled."

For anyone interested in landscaping, or even just in gardening, *Siftings* is a book well worth reading.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Native Trees of Georgia, by G. Norman Bishop. Published by the Georgia Division of Forestry, 435 State Capitol, Atlanta, Ga.

Cornell Rural School Leaflet for 1940-41, by E. Laurence Palmer. Teachers' Number, Vol. 34, No. 1 and

Cornell Rural School Leaflet—The Finer Side of Life, by E. Laurence Palmer. Vol. 34, No. 2, Cornell University, Ithaca, N. Y.

The Work of the U. S. Forest Service. Misc. Pub. No. 290, For. Serv., U. S. Dept. of Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

Decisions of the United States Board on Geographical Names—decisions rendered between July 1, 1939 and June 30, 1940. Supt. of Docs., Wash., D. C.

Diagnosing Rural-Community Organization, by Douglas Ensminger. Cornell Extension Bulletin 444, and

Extension Work in New York in Agriculture and Home Economics. Cornell Extension Bulletin 443, Cornell University, Ithaca, N. Y.

Arbor Day—Its Purpose and Observance. Prepared by the Forest Service, U. S. Dept. of Agr., Farmers' Bull. 1492. Supt. of Docs., Washington, D. C. Price 10 cents.

Increased Naval Stores Production from Chemically Treated Streaks, by T. A. Liefield. Oc. Paper 97, Sou. For. Exp. Sta., New Orleans, La.

Observations on Requirements for Restocking Cutover Loblolly and Shortleaf Pine Stands, by Leonard I. Barrett, For. Serv. Dept. of Agr. Tech. Note 42, Appalachian For. Exp. Sta., Asheville, N. C.

Forest Statistics for Clallam County, Washington. For. Survey Report No. 79. Pacific Northwest For. Exp. Sta., Portland, Oreg.

Chicago Park District, Fifth Annual Report, 1939. R. J. Dunham, Pres., Park Dis., Chicago, Ill.

Vermont Department of Conservation and Development. Annual Report of the Board, 1940. Montpelier, Vt.

Supplemental Irrigation, by F. E. Staebner. Soil Cons. Serv., U. S. Dept. of Agr. Farmers' Bulletin No. 1846. Supt. of Docs., Washington, D. C. Price 10 cents.

Men and Resources—A Study of Economic Opportunity in the Pacific Northwest. Published by Northwest Regional Council, Portland, Oreg. Price 75 cents.

Forestry on Private Timberlands. A pictorial record prepared by the For. Serv., U. S. Dept. of Agr., Misc. Pub. No. 381. Supt. of Docs., Washington, D. C. Price 10 cents.

First-Year Survival and Height Growth of Cottonwood Plantations at Stoneville, Mississippi, by Henry Bull and J. A. Putnam. Oc. Paper 98, Sou. For. Exp. Sta., New Orleans, La.

SCIENCE AND EQUIPMENT

FIRE RESISTANT PAINTS

For several years the United States Forest Service has been conducting experiments with fire-resistant paints. Of these, the Service now reports that the most satisfactory are those made with linseed oil and finely ground borax. Pigments may be added to provide desirable brushing qualities and to furnish hiding power.

In the manufacture of this paint the borax is ground in a pebble mill and screened through a 200-mesh sieve. Then two parts of the powdered borax by weight are mixed with one part of raw linseed oil and thoroughly ground. This paste is then mixed with color, turpentine, and drier just before using.

POISON INJECTION TOOL

A tool recently developed by the Southern Forest Experiment Station for punching holes in the roots or stems of scrub oaks and other undesirable trees for the injection of poisons consists of an ax with a special attachment made from octagon tool steel. The opening in the side of the attachment is oval in shape, one and three-quarters inches by one half inch.

The end is tapered to one-eighth inch shorter at one side, and the attachment must be placed on the ax so that the short side will be upward when the tool is driven into the tree. One stroke removes a core of wood an inch long and a half inch in diameter, leaving a clean hole. Many holes can be made with little effort.

The Southwestern Forest and Range Experiment Station has modified this tool slightly. For the ejection of the core, a trough is cut in the ax head at the base of the punch instead of making the oval opening; this reduces the cost of making the tool.

NYLON FISHING LEADERS

Nylon fishing leader material in continuous lengths now is available for the first time, it is announced by the Plastics Department of E. I. du Pont de Nemours & Company. It is produced in strengths from six pound test up to twenty pound test, at the request of fishermen who have used nylon tapered and level leaders since 1939.

The continuous length nylon leader material has the same superiority over natural gut as nylon in the tapered and level leaders. It is made in mechanically-controlled, uniform diameters. It may be tied dry, cast dry, and straightens easily while still dry. Continuous length leader material has less sheen than natural gut, and is practically invisible in water. Being a monofilament, nylon leaders do not fray or split.

"55" CATERPILLAR TRACTOR

A new 55-horsepower Diesel tractor, which has been designed to meet the present day problem of greater capacity and speed without increased operating costs, has been announced by Caterpillar Tractor Company.

The new D6 tractor offers many engineering developments which enable it to do an unusually large quantity of work in relation to its size and horsepower.

A wide variety of allied equipment has been designed for the new tractor. Cable controlled or hydraulically operated scrapers of 8-9 yard capacity are available. Logging arches, bulldozers, winches, and other equipment fit in for almost every type of heavy-duty work.

EROSION CHECK CLOTH

"Erosionet," a strong economical open mesh fabric made of tightly twisted paper twine and designed for use in checking soil erosion, has been announced by the Bemis Brothers Bag Company. When placed over seeded surface, its one-quarter inch square mesh is said to form millions of tiny dams which catch and hold seed and sod firmly in place, and thus checks damaging "washouts" from heavy rains without cutting off the sunlight. "Erosionet" is also said to catch and hold moisture and to be rot-resisting.

COOLING ARTESIAN WELL WATER

Water too hot to handle is included among the unusual problems confronting Bureau of Reclamation engineers engaged in constructing the Coachella branch of the All-American canal in Lower California. The water, needed for concreting a siphon in the national conservation project, is obtained from a nearby artesian well and steams out of the earth with a temperature of 170 degrees, just twenty per cent below the boiling point. To cool the water, it is passed through a cooling and aerating tower and allowed to fall ten feet into a pond, where its temperature is reduced to about seventy-five degrees.

Fire Fighters Attention

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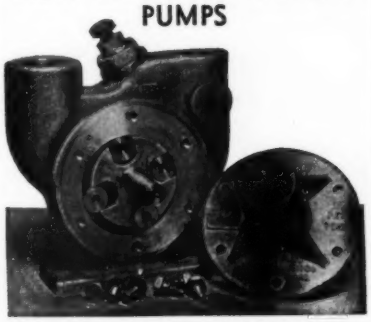

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Grouse Feed from His Hand

(*Continued from page* 230)

sportsmen's organization, a conservation group somewhere in the United States, cast a bronze or silver medal to be bestowed annually on the person who for that year has rendered outstanding service to wildlife. A *Croix de Paix*, as it were, for gallantry on conservation's front.

And I should like to nominate Bill King as the first to receive that medal. Twenty-five years of unfailing service to his birds, of rising before dawn each cold winter morning, of waiting at the door each evening at dusk, keeping the confidence of wild grouse, entitles him to recognition, it seems to me, for it has taken far more than corn to do what Bill has done.

Bad Fires in Maryland, Virginia and Pennsylvania

As we go to press, fires are laying waste Maryland woodlands at the rate of more than ten a day, and every available man in the western Maryland fire fighting forces is now on duty in an attempt to check them.

State Forester F. W. Besley places the total for the year at approximately five hundred fires, as many as thirty or thirty-five fires having been reported in a single day in the past several weeks. He blames the long dry spell as responsible for the worst fire weather conditions in the state for several years and warned farmers not to start burning brush without taking great care to prevent the flames spreading to nearby woodlands.

From Virginia also State Forester Pederson reports many blazes, the lookouts being unable to see more than four or five miles due to the heavy smoke haze over the state. Only rain will relieve the situation, he says.

In Pennsylvania and New Jersey scattered fires are burning, and widespread damage is reported. The scorching temperatures that broke all heat records for over forty years are thought to be largely responsible.

Correction

On page 170 of the April issue of AMERICAN FORESTS it was stated that the stand of sugar pine in California is approximately twenty million board feet — this should have read twenty billion board feet. On the same page it was stated that the stand of ponderosa pine in the State of California is estimated to be fifty-four million board feet — this should have read fifty-four billion board feet.

Also on page 171 occurs the statement that the Grizzly Giant stands in a grove of Bigtrees in Sequoia National Park, whereas it stands in the Mariposa Grove, in Yosemite National Park.

Bursting Buds

(*Continued from page* 227)

chestnut, hackberry, moosewood, and mountain maple.

Dioecious—stamens and pistils in different flowers on different trees: Willow, ash, holly, sassafras, persimmon, Kentucky coffee tree, poplars, mulberry and osage orange.

Polygamo-Monoecious and Dioecious—Sugar maple, silver maple, and red maple.

The wind-pollinated flowers use a super-shotgun method for hitting their targets. They literally gush pollen. This can sometimes be seen in the spring flowing from trees in clouds of yellow dust that fill the air with viable microscopic cells. Hay fever sufferers know the universal presence of this organic dust. An infinitesimally small proportion (but enough to serve Nature's purpose of propagating the species) lands haphazardly on the stigma of its kind, and sets the fruit.

To produce pollen in such prodigal quantities requires a highly developed mechanism. One of the most interesting is the catkin type of flower that appears on the birches, willows, poplars, oaks and walnuts. Catkins are tassels from an inch to four or five inches in length. To produce pollen, they have countless numbers of stamens packed tightly together along the "spinal column" of the catkin. When ripe, the outside segments of the catkin open, the stamens separate slightly and the tassel dangles in the breeze discharging its pollen.

The flowers (those with pistils) that produce seeds are even less conspicuous than those that produce pollen. They may be merely a tiny bud that opens at its tip to put out green or pink stigmas, perhaps an eighth of an inch long, sticky to catch their pollen grains. If the pollen from another species lands on this little device, nothing happens. If the pollen of the same species comes along, an activity is set in motion that results ultimately in a nut or a winged seed or whatever the type produced by that tree.

Remember the Dog with the Cold Nose!

(*Continued from page* 232)

train to sixty miles an hour. The palisaded curve beyond Humboldt canyon bridge was dead ahead. The last block signal said 'All Clear.' The train sped on.

"Suddenly, as the glare from the headlight burst upon the upright girders of the bridge, the locomotive swerved, tipped, righted itself, and with two of its cars careened and bumped across the span. With a snap and buckle of steel, the center cars broke loose. Like plunging horses, they reared, bucked, smashed into the side girders of the bridge and hurtled ponderously into the rocky stream bed below. The rear cars jarred to a thundering stop; some tipped over; the last car clung to the rails."

In the aftermath of the wreck, it was found that the plywood and steel panels in some of the cars had neither crumpled like steel nor splintered like wood. The story of that discovery led quite naturally into a popularized discussion of the marvelous properties of this new material and the surprising developments in resins which had made it possible. This plywood talk pictured the expansive future for this new large-scale industry in the Northwest. Its nemesis, again, was fire. Fire could wreck the trees, stop the mills, kill the jobs.

Other programs in this radio series treated in a purely informal fashion the much-maligned cougar, the elusive deer, and the elk, bugler of the mountain glens. Into one talk trotted the wolf, the satanic beast of legend and fable. Another talk told of the rare sea-otter, victim of man's butchery and adventure. An old magazine yielded the story of the cutting down of a vast Sequoia tree in 1850. This made an interesting tale. As a sequel, another broadcast told of the huge dinosaurs or "terrible lizards" which had roamed the prehistoric Sequoia groves. They were part of the wildlife in ancient times. For the many travelers who had gone to California, still another talk explained the origin of the exotic trees of the southern California lowlands—the palm, the acacia, the eucalyptus, the deodar. Several presentations gave vivid highlights in the experiences of a forest ranger.

At this point one may very well ask: Were the programs successful? Did they get people's attention? Did they get results? Unfortunately, it is never possible to give an accurate statistical answer to such queries. However, people were interested. The programs created "fans." They wrote in and called the radio station. Many people living in the community and about in the hills and woods listened quite regularly. They told the men of the Forest Service about it. People did talk about the programs;

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they did seem to appreciate the stories and the information. Many commented on the fact that each program gave them something definite. It was true, the fire warning was always there, but it came at the end. The listener got some "sugar" first.

When forest officers or rangers go to talk before a Rotary Club, a Chamber of Commerce, a high school group, they often miss their big tricks. They go primed with "big material" and high-sounding technical terms. They bewilder their audience with "climax types," and "sustained yield," and "growth cycles," and even "board feet." The average citizen does not know the difference between a board foot and a British thermal unit. And, he doesn't care. Forest men should go out with simple tales about simple things. They should leave big professional problems and the jargon of the forestry schools at home.

Then, too, forest men so often fail to use surprise. People expect foresters to talk about forest fires. Why not surprise them? Why not leave the fire talk until the end? Why not start with something else they are really interested in? Surprise works in war, surprise works in love, and it certainly will work in a fire prevention talk. Try it.

Foresters should do what the advertisers do. They do not talk much about Jello. They furnish gags and Jack Benny. They don't talk much about cigarettes. They furnish dance music with Glen Miller and his orchestra. The advertising men say very little about soup. They furnish fifteen minutes of amusing dialogue with Amos 'n' Andy. Why not follow suit?

It is true that foresters cannot furnish gags and music and black-face comedians. However, they could make use of what they have. Every forester meets and knows strange characters of the woods. Why not tell about them? Mineral deposits, lost claims, abandoned mines—often such things have a story. Why not tell it? Animals provide lively subject matter. The story of a pet deer or a friendly beaver cannot fail. It will pack more punch with an audience than twenty stands of burning timber. They know that the timber burns. They read that in the newspapers. Give them something different. Surprise them. They will take the fire stuff at the end.

In this coming fire season, every man who wants to can give a first rate talk. However, he must first ask himself: What are people interested in? What gets their attention? What do they take home and remember? Then the prospective speaker should think of a little story. It beat the British empire. It routed the German army. It put the plight of France in the shade. It was just a little story about a man and his dog; but it stuck in people's minds, it was full of human interest, and the dog had a very cold nose.

From the Prairies to the Bighorns

(*Continued from page* 220)

across this plain, depositing beds of limestone. Ages later, earth forces pushed the plain upward, while the limestone was worn away. You are driving across a one-time sea bottom at an elevation of 8,000 feet!

Crossing Muddy Pass, one soon begins to descend through Ten Sleep Canyon. Its walls are lined with buff rocks, made largely from limy seaweeds that grew in one of the seas that covered the ancient, rolling plain. Again and again we have looked at the strata in those towering cliffs, trying to picture them as banks of plants living in salt water. But our eyes always come back to pinnacles and turrets; to tall pines that look like dwarfs as they perch upon precipices. We know that we stand among ancient seas, and are ready to argue the case for those seaweeds with doubting geologists. But to realize the seas is another matter—one we'd rather not take up.

Ten Sleep Canyon opens through a lovely red gap into evil looking badlands. People who have read too many travel thrillers look for vicious crawling things —thick snakes coiled ready to strike, lizards dragging bulbous tails, poisonous scorpions. Actually, they find sparse, struggling tufts of grass, stones polished by windblown sand, and perhaps a few wary prairie dogs. Even these rodents often are lacking, for ranchmen poison them in an effort to save every blade of grass for their sheep.

We always have other plans that come first. On our last trip we detoured to the red beds south of Worland; framed between cottonwoods and sage brush, they are a prize no color photographer should miss. Then we stopped for a few days at a beet ranch, to learn how irrigation makes cheap sugar possible. From the ranch we went to the quaint little town of Shell, where a ranchman who once ran sheep in the mountains offered to help us hunt petrified sea plants. We also spent several sunset hours watching light shift across the alfalfa fields, sage, red shales and steeply tilted limestones that rise from the Bighorn Basin and climb toward snowy peaks.

We were taking days from our stay in the Yellowstone—but what of it? We had seen its hot springs and geysers twice before. There would be time for the Red Lodge-Cooke road, at least, with its alpine meadows and high, unspoiled lakes where one may camp free from crowds and from caution lest bears rip one's outfit to pieces the moment his back is turned. We thought about those lakes and meadows again and again, recalling trails that cross the road and then disappear into valleys which to us, at least, were unexplored. Why not go back to them and spend our last five days exploring their mysteries? If they were as fine as they seemed, we'd be ahead. If they weren't—well, they could not rob us of this beauty—sunset's red and gold spreading along the western slopes of the Bighorns.

For 1941

Ten Wilderness Trips

for Your Enjoyment

Ten expeditions to the major wilderness areas of nine different states are being planned for the Trail Riders of the Wilderness this summer under the direction of The American Forestry Association in cooperation with the United States Forest Service and the National Park Service. Dates for these trips are as follows:

Expedition No. 1—June 22 to July 2

The Great Smoky Mountains of North Carolina and Tennessee—lofty mountains, virgin forests, plunging waterfalls, early summer wild flowers.

Expedition No. 2—July 8 to July 19

The million acre Flathead-Sun River Wilderness of Montana — a country of rugged grandeur just south of Glacier National Park and straddling the Continental Divide.

Expedition No. 3—July 16 to July 27

The remote Spanish Peaks-Hilgard Wilderness of Montana—rugged mountains, unnamed lakes, rushing streams, beautiful forests.

Expedition No. 4—July 18 to July 29

The Wind River Wilderness of Wyoming—a land of many glaciers, of timberline trees, of spectacular canyons, of incomparable beauty.

Expedition No. 5—July 21 to August 3

The magnificent Sawtooth Wilderness of Idaho—a wild kingdom of serrated mountains, alpine lakes, and pine forests.

Expedition No. 6—July 25 to August 7

The Maroon Bells-Snowmass Wilderness of Colorado—where the rugged mountain grandeur of the Rockies reaches dramatic heights.

Expedition No. 7—July 30 to August 10

The storied Gila Wilderness of New Mexico—a high country of timber and grassland, of winding canyons, of buttes and mountains that reflect astonishing colors in the sun.

Expedition No. 8—August 12 to August 25

The Flat Tops Wilderness of Colorado—a land of quiet charm, of amazing beauty in alpine meadows, forested valleys and flat, broken peaks.

Expedition No. 9—August 22 to September 2

The Sequoia-Kern Wilderness of California — the nation's greatest spectacle in varied and unique mountain scenery. A true wilderness of the sky.

Expedition No. 10—September 9 to September 19

The Great Smoky Mountains of North Carolina and Tennessee—same itinerary as Expedition No. 1, with the beauty of early autumn as a background.

Make 1941 your year to ride with the Trail Riders of the Wilderness. Thirty-four expeditions have been successfully completed since 1933. Riding and pack horses are thoroughly trained to mountain travel; only expert guides, packers, wranglers and cooks are employed; a physician is with each party.

Get away from the beaten trail. Enjoy the solitude, the beauty and the peace of the wilderness. Spend days in the saddle; enjoy the fellowship of wilderness campfires; sleep beneath the stars. For further details write

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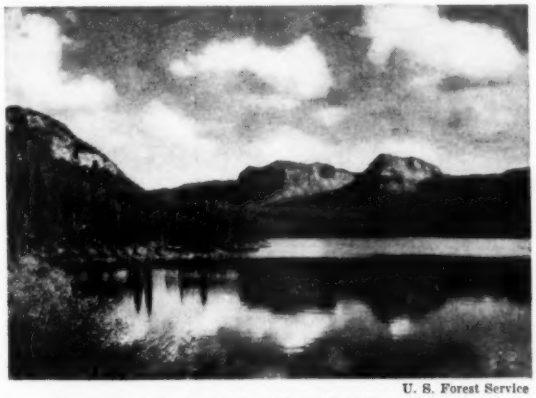
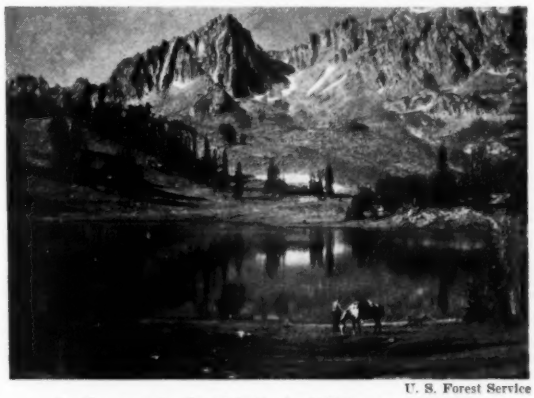


U. S. Forest Service

Trapper's Lake in Colorado's Flat Tops Wilderness



U. S. Forest Service

In the remote Spanish Peaks Wilderness, Montana

Rae Lakes, gem of the High Sierra, California

John B. Schutte

In the heart of rugged Snowmass Wilderness, Colorado

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WHO'S WHO

Among the Authors in this Issue

E. H. Frothingham

E. H. Frothingham (*Biltmore — Fountain-head of Forestry in America*), long and well-known in the field of professional forestry, was formerly Director of the Appalachian Forest Experiment Station at Asheville, N. C., is now doing special work in connection with the extensive experimental plantings made at Biltmore so long ago.

He is a native of Iowa and was graduated from the University of Michigan 1900-06, A.B. and M.S. in forestry—since which time he has been continuously with the U. S. Forest Service. A former Secretary of the Society of American Foresters, he is a member of the American Association for the Advancement of Science.

Carroll Lane Fenton

Carroll Lane Fenton (*From the Prairies to the Bighorns*), a geologist, is also a native Iowan. He has written many technical publications dealing with the fossils, evolution, and geology of the northern Rockies. Mrs. Fenton, who is also a geologist, collaborated with him in his recent volume, *The Rock Book*.

Mark Hanna (*Remember the Dog with the Cold Nose!*) is an instructor in the Speech Department of the University of Oregon. Admits to being a "fanatical" conservationist, and thinks soil erosion a more serious problem than Adolf Hitler. Believes heartily in the value of good public speaking and spends all the time he can saying so—via many publicity channels, including radio.

Leroy N. Kilman (*The Fly Rod for Black Bass*), a fishing enthusiast, is a veteran and lover of the sport—has fished all over the United States, in British Columbia and Ontario, not overlooking salt water angling in Florida and California. When he is not fishing, or working with the fast-action camera in connection with it, he is writing *about* it for the outdoor magazines.

Rutherford Platt

Rutherford Platt (*Bursting Buds—A Billion Silent Explosions*) is a big business man with an avocation—to show other business men what they are missing. So he explores the world of nature with his camera, specializing in close-up pictures of tiny things. He lectures and writes—his beautiful work having appeared in recent issues of *Natural History, Life* and other magazines. Just back from an exploration trip in Florida's wilds, where he has been delving into the private lives of carnivorous plants and photographing them in natural color, he is enthusiastic about his findings and plans to write about them soon in a national magazine.

Ben East (*Grouse Feed From His Hand*)—a champion of conservation whose work is well known to the readers of this magazine. Native of Michigan, he is a militant editor, and ever a leader in the battle along the conservation front, whatever the issue.

L. A. Barrett

L. A. Barrett (*Two Thousand Miles with a Pack Train*), veteran forester, was born in Illinois but has spent most of his life in California. A veteran of the Spanish-American War and the Philippine Insurrection, Mr. Barrett spent two years in the Service in the Islands.

As a member of a survey party of the General Land Office, he spent the year 1902 engaged in public land surveys through the Rocky Mountain region from Texas to Montana.

He entered the U. S. Forest Service in 1903 and retired in 1936, after serving as inspector, supervisor and regional forester. Before retiring he wrote historical reports for the Service on Forest Homesteads, Mining Claims and Early Day Forest Fires in California.

Though retired from active service, Mr. Barrett keeps up his contacts with local, state and national conservation and educational organizations.

The Cover—The Fruiting Earth. Photograph by the Soil Conservation Service.

THE 1941 FOREST FIRE PREVENTION POSTER STAMPS ARE READY

NOW AVAILABLE The American Forestry Association's new 1941 Forest Fire Prevention Poster Stamps. Designed and painted by Devereux Butcher and beautifully lithographed in four colors, each stamp bears the slogan—"DEFEND AMERICA—INDUSTRY MUST HAVE RESOURCES — PREVENT FOREST FIRES." Each sheet contains 100 stamps. These are more colorful than any previously issued by the Association. The stamps are arresting reminders to be careful with fire while in the woods.

THIS YEAR Millions of people vacationing in our forests and woodlands must be reminded to be careful with fire. Burned forests are lost wealth. No nation can remain rich and powerful without an abundance of natural resources. The Poster Stamp provides a quick and effective means of reaching large numbers of people, and offers an easy and convenient way for you to do your bit in helping to save our forests, wildlife and soil from the ravages of forest fires.

USE STAMPS On your letters, postcards, packages and bills—on every piece of mail that leaves your hand or office. Order your supply today and help spread the message of the importance of saving our forest resources which are now so vital to national defense.

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Please send me ..... sheets ($1 per sheet of 100 stamps) of the 1941 Forest Fire Prevention Poster Stamps. I enclose $ .....

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Here's How

INDIAN FIRE PUMPS

PUT OUT A "HOT SPOT" ON THE FIRE LINE AT STATE FOREST, PA.

THERE are more INDIAN FIRE PUMPS in service today than ever before. From the forests of Maine to the mountains of California, INDIANS fight fire in all its forms—and WIN! The forester, the lumberman, the fireman, the CCC boy, the camper, the farmer; all of these and many others use INDIANS to save timber, property and lives.

Once the big 5-gal. tank has been filled with clear water you're ready for action. When needed sling on shoulders or carry by hand. Slowly working pump back and forth pours driving pressure stream to base of flame—*killing it instantly.* Grass, forest, tent, building fires are put out before they spread. Any lake or water supply serves for refilling if necessary. Those who are removed from regular fire protection agencies need INDIANS—*they are the best fire insurance policy.*

Send for catalog and testimonials from users

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"Mopping up" with INDIANS after large South Carolina forest fire.

CCC boys using INDIANS to stop brush and grass fire in Ozark National Forest.

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